

JPRS-TEP-86-019

25 AUGUST 1986

## Worldwide Report

# EPIDEMIOLOGY



FOREIGN BROADCAST INFORMATION SERVICE

#### NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

#### PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

25 AUGUST 1986

## WORLDWIDE REPORT

### EPIDEMIOLOGY

#### CONTENTS

##### HUMAN DISEASES

###### AFGHANISTAN

- State To Intensify Campaign Against Malaria  
(Kabul KABUL NEW TIMES, 10 Jul 86)..... 1

###### BELGIUM

- Malaria Strikes Customs Officials at Brussels Airport  
(Brussels LE SOIR, 4 Jul 86)..... 3
- Preventive Measures at Airport, by Alain Guillaume 3  
Comments by Medical Expert, Jean Sonnet Interview 4

###### BERMUDA

- Minister of Health Reports on AIDS Situation  
(Hamilton THE ROYAL GAZETTE, 5 Jul 86)..... 6

###### BRAZIL

- Malaria Incidence, Efforts To Eradicate Carrier Discussed  
(Sao Paulo O ESTADO DE SAO PAULO, 23 Jul 86)..... 7
- Briefs
- Polio Incidence on Rise 8
  - Meningitis in Paraiba 8
  - Polio Cases Detected 9

## INDIA

Polio Reported Spreading Fast in Aurangabad (Bombay THE TIMES OF INDIA, 13 Jul 86).....	10
Suspected AIDS Patient Back in Hyderabad (Bombay THE TIMES OF INDIA, 7 Jul 86).....	12
Briefs	
Conjunctivitis Epidemic	13
First Against Malaria	13
Cholera-Affected Area	13
Cholera in Gujarat	13

## MALAYSIA

Briefs	
Dengue Fever Figures	14

## MONTSERRAT

Briefs	
Viral Hepatitis Outbreak	15

## NETHERLANDS

Incidence of AIDS Rising Rapidly (Rotterdam NRC HANDELSBLAD, 9 Jul 86).....	16
--------------------------------------------------------------------------------	----

## NICARAGUA

Health Ministry Notes Spread of Contagious Diseases (Managua BARRICADA, 12 Jul 86).....	18
Dengue Statistics	18
Health Alert in Leon, by Noel Mendoza	18

## PEOPLE'S REPUBLIC OF CHINA

Hepatitis A Virus Causing Cytopathic Effects Isolated (Wu Shen, et al.; Beijing CHINESE MEDICAL JOURNAL, No 5, May 86).....	20
Infection of Legionella Pneumophila (Liu Shuiqu, et al.; Beijing CHINESE MEDICAL JOURNAL, No 5, May 86).....	26
China Claims 3 Major Diseases Controlled Using Trace Elements (Ye Dingbong; Beijing CHINA DAILY, 5 Aug 86).....	32

Tianjin Virology Seminar Records Successes (Beijing XINHUA, 23 Jul 86).....	34
Improvement Urged in Rural Medical Care (Beijing XINHUA, 12 Jul 86).....	35
Briefs	
Guangdong 'Para-Cholera' Cases	36
Prevention of Endemic Disease	36
POLAND	
Geographic Patterns in Mortality, Hospital Morbidity Analyzed (M. Wysocki; Krakow PREZEGLAD LEKARSKI, No 3, Mar 86).....	37
UNITED KINGDOM	
Briefs	
Rise in Whooping Cough	45
ZIMBABWE	
Local Berry May Eradicate Bilharzia (Gweru MOTO, No 46 [no date given] ).....	46
PLANT DISEASES AND INSECT PESTS	
VIETNAM	
Measures To Protect 10th Month Rice Discussed (Nguyen Quang Tho; Hanoi NHAN DAN, 16 Jun 86).....	48
Country Warned of Rice Crop Insect Outbreak (Hanoi Domestic Service, 31 Jul 86).....	51
Briefs	
Mekong Delta Pest Control	52

/6539

AFGHANISTAN

STATE TO INTENSIFY CAMPAIGN AGAINST MALARIA

Kabul KABUL NEW TIMES in English 10 Jul 86 p 4

[Text]

The Institute for campaign against malaria and for parasitology, has checked and treated during 15 months over 333,000 patients affected by malaria, leishmaniasis and intestinal diseases.

According to the policy of the DRA state on rendering free health services to the citizens, the institute carries out through its different departments free supply of medicines, laboratory check up and treatment of patients affected by the above diseases.

All the city polyclinics, hospitals, armed force polyclinics, education health centres, family guidance associations all over the country are furnished with the malaria and parasitology laboratories. Seven such laboratories were newly opened and are functioning in Kabul city. Presently, 203 laboratories are functioning all over the country.

The institute, in the first quarter of the current Afghan year in its campaign against anopheles mosquitos over an area of 2,475,500 square metres of water logged marshy areas sprayed 55 litres of abit, 830 litres of mobile oil, and spread 300,000 gambusia fish and filled 40,000 cubic metres of marshy pits with soil.

Research was also carried out on two species of bacilli in the water at a depth of 1-100 metres. The bacilli will be used to inhibit the larval stage of anopheles mosquitos.

Malaria occurs in Kh-ost division and Kunduz, Badakhshan, Takhar, Nangarhar, Laghman, Konarha, Kandahar and Helmand provinces, and leishmaniasis is prevalent in Herat, Kandahar Kabul, Kapisa provinces and Mazar-i-Sharif and Aqcha cities.

Due to geographical, climatic and hygienic condition intestinal paras-

itic diseases are prevalent throughout the country.

The institute for campaigning against malaria, and parasitology during the first quarter of the current year had held four training courses of five weeks duration in the centre and provinces of the country for further education of its personnels. The trainees were taught by Afghan and foreign experts.

For improvement of activity and drafting of the operative plan for the control of the above mentioned diseases in the country, a seminar of regional directors and related units was held for a week. Similarly, the institute for training its 22 techn-

icians held a six weeks course in the first quarter of the current year.

The institute besides carrying on effective work in the centre has also organised its activity in the provinces through 8 zones and 33 units to fight malaria, leishmaniasis and intestinal diseases.

With the help of experts from the Soviet Union and WHO the institute has drafted plans for the HS 1365 and 1366. In these plans emphasis has been laid that the personnel of the institute should as the first

step provide necessary medicines for treatment of disease to the people. The programme is somewhat fulfilled.

The institute is planning to urgently apply necessary measures all over the country for treatment of positive cases, anti-larva activity and spraying operation against disease transmission. It is also proposed to increase the activity of the institute all over the country by the end of HS 1369.

WHO and UNICEF, have permanent cooperation with the Institute. The UNICEF recently donated one million chloroquine tablets to the Institute.

/12828

CSO: 4600/427



BELGIUM

## MALARIA STRIKES CUSTOMS OFFICIALS AT BRUSSELS AIRPORT

### Preventive Measures at Airport

Brussels LE SOIR in French 4 Jul 86 p 3

[Article by Alain Guillaume]

[Text] Wednesday afternoon, Secretary of State for Public Health Wivina Demeester released an official communique reporting that the condition of the four customs officials who contracted malaria in recent days "is developing favorably." Even the patient whose illness worried doctors seems to be recovering gradually.

And what is being done for others? They are being asked to submit to tests in Antwerp (to date, nothing worrisome has been discovered), and the procedures for disinfecting the baggage compartments of planes and certain working premises are being improved.

An astonished worker at the Zaventem site caught a mosquito yesterday morning and put it in the refrigerator. A humorous as well as a curious man, the hunter then called one of his bosses. "When a plane is in flight, the temperature in the baggage compartments is 20 degrees at most, right? And that's too cold for mosquito? Well, boss, have a look in my refrigerator." "It's a fact," his boss replied, "your mosquito is alive, but it's doubtless because it's a Belgian mosquito and it doesn't have malaria!"

Apart from jokes of this nature--a single mosquito bite at Brussels National now produces a number of near fainting spells--no one can forget that a man died of malaria over the weekend. Even though the "disinfectant agents" are met with protests of "No, not again? That thing of yours stinks...", everyone remembers that the trade union representatives have for a longtime been reporting "an intolerable lack of sanitary measures observed in numerous customs locations" to the Ministry.

Nonetheless, on Wednesday, the "mosquito busters"--the disinfecting agents of the Saniport (a public health department), and those employed by the private freight companies--covered the whole of the airport, well supplied with their little spray cans (containing a "special airport" mixture of 2 percent D-phenotrim and 98 percent freon).



Since 1958, sprays of this type have been used to disinfect the cabins of aircraft arriving from zones in which "malaria-carrying mosquitoes" and cockroaches of all sorts proliferate. If they are properly used, these sprays prevent the planes from becoming breeding environments for the harmful anopheles. And what about the baggage compartments? In theory, the insects cannot survive the cold there. But only "in theory." Thus since yesterday, three or four "minispray" cans have been emptied into every airplane hold before unloading, with care being taken to prevent the gas from contaminating foodstuffs.

And what about the hangars? They are so large and so well ventilated that, it is said, it is impossible--and doubtless futile--to try to disinfect them. Offices, on the other hand, are now being "gassed" as needed, or in other words, especially if packages are opened there to display the contents to customs officials.

Is this enough? No one is really sure, but on the other hand, the picture of these "health officers" patrolling the cabins and the baggage holds, Flytox in hand, does indeed have a worrisome old-fashioned aspect.

Comments by Medical Expert

Brussels LE SOIR in French 4 Jul 86 p 1

[Interview with UCL Professor Jean Sonnet by Jacques Poncin; date and place not given]

[Question] Professor, on learning that five customs agents in Zaventem had contracted malaria, the public came to realize, in a way, that tropical diseases do exist.

[Answer] Indeed yes, they exist, and they are more widespread than is commonly thought. And even in our country, as it is not at all rare for a hospital to admit patients suffering from malarial fever. This is the logical consequence of the many trips we make routinely, thanks to air travel, to regions infected by this parasite.

[Question] But isn't transmission by a mosquito transported by airplane a rarer occurrence, all the same?

[Answer] Without a doubt. But this is not a unique case. There have been others reported in the scientific literature. There was a case in Schiphol, one in Geneva, and another in Zaventem, but in this instance the mosquito left the airport area and bit an individual in a neighboring village. However, for this to happen the sultry heat we are experiencing now is necessary. Otherwise, a mosquito cannot survive.

[Question] Could these five cases mean the beginning of an epidemic in Belgium?

[Answer] Certainly not! This type of mosquito cannot survive long in our country.

[Question] However, it was not so long ago that malaria was endemic here.

[Answer] Precisely, but this was quite a different parasite, because our native mosquitoes cannot carry this parasite of tropical origin. No, in this connection, the public at large should be greatly reassured. There will not be a malaria epidemic in Belgium tomorrow.

[Question] One of the customs agents died of the disease. Is it conceivable that still, in our day, one can die of malaria?

[Answer] The greatest problem lies in the difficulty of diagnosing this disease properly and speedily. The symptoms are rather extreme fever, headaches, digestive problems, in short, nothing really exclusive. And in addition, our doctors see the disease so rarely that they are not trained to recognize it. Sometimes at university institutions it even takes several days to reach the proper diagnosis and begin the appropriate treatment. This may perhaps explain the tragic case of this customs agent.

[Question] Doubtless one thinks of this possibility more readily when the patient has just returned from a tropical country?

[Answer] That is true. And this leads me to remind those returning from such countries to watch for any fever and to be sure to mention to their doctors that an attack of malaria might be a possibility.

[Question] But isn't malaria mainly a Third World plague?

[Answer] It affects Central Africa in particular. I will mention just one figure which I happen to remember at the moment. A recent study showed that one out of every three young persons 15 years of age in Kinshasa carries this notorious parasite, suffers at least periodically from this disease, and is likely to ensure its propagation, with the complicity of certain mosquitoes.

[Question] Have campaigns to eradicate the mosquitoes and parasites failed, then?

[Answer] In fact they have. And in these countries, a certain discouragement, in view of the scope of the problem, prevails.

5157

CS0:5400/2548

BERMUDA

# MINISTER OF HEALTH REPORTS ON AIDS SITUATION

Hamilton THE ROYAL GAZETTE in English 5 Jul 86 p 1

[Text]

Health Minister the Hon. Ann Cartwright DeCouto yesterday warned that most of Bermuda's needle drug addicts are expected to die of the deadly AIDS disease in the next few years.

"We would be surprised if they did not all contract AIDS and thereafter die unless a cure is found in the meantime," she told the House of Assembly.

She insisted it would be invidious to predict the exact number of deaths but warned that all intravenous drug users are highly at risk.

The number of AIDS cases has now climbed to 45, and 28 people have died from the killer disease. The last official statistics showed 30 cases in January and 19 deaths.

Health officials have already warned that a quarter of the island's 300-plus hardened drug addicts will die of Acquired Immune Deficiency Syndrome in the next few years.

Mrs. Cartwright DeCouto said 17 patients were receiving hospital treatment for AIDS, and there was an average of four patients in the King Edward VII Memorial

Hospital at any time.

She provided the latest figures after National Liberal Party MPs Mr. Austin Thomas and Mr. Gilbert Darrell tabled formal Parliamentary questions.

They show all AIDS patients are aged between 20 to 49 years, 88.9 percent are black, and 82.2 percent are male.

AIDS was contracted through intravenous drug abuse in 82.9 percent of the cases.

Mrs. Cartwright DeCouto said special measures were taken in the island's prisons and all prisoners had medical examinations each year.

High risk prisoners, including homosexuals and intravenous drug abusers were screened for AIDS antibodies on admission and release from prison, and other prisoners could request the medical tests.

She said homosexuals were locked up in separate cells whenever possible or shared cells with other homosexuals when the

prison was overcrowded.

A total of 63 prisoners have been checked for AIDS and 40 had produced positive results showing they had been exposed to the AIDS virus.

Three prisoners were diagnosed as suffering from AIDS and one from the less serious AIDS Related Complex.

She added there were no prisoners with AIDS at the moment although 22 inmates had produced positive test results.

Prisoners suffering from the disease are taken to hospital when they become acutely ill although they could be treated by the prison nursing staff and medical officer.

She said no prisoners had yet required hospitalization, although one prisoner died after being released.

"Government considers the question of AIDS in Bermuda, and in the world, to be alarming. We cannot say that we have had any more success than other countries with the problem," she said.

/9317

CSO: 5440/105

BRAZIL

MALARIA INCIDENCE, EFFORTS TO ERADICATE CARRIER DISCUSSED

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 23 Jul 86 p 10

[Text] Sao Paulo now has 1,800 cases of malaria, which is also affecting western Parana, where 2,000 people are infested. This was reported yesterday in Rio by Health Minister Roberto Santos, when he announced the emergency and preventive measures which are being taken nationwide for the eradication and control of the mosquitoes which transmit diseases.

The presence of the Aedes Albapictus, better known as the "Asian tiger," for example, has already begun to be alarming. A possible carrier of dengue fever, encephalitis and yellow fever, the mosquito has already affected 7 municipios in Rio de Janeiro State, 12 in Minas Gerais and 37 in Espirito Santos, where it is presenting a major concentration, leading to the conclusion that it entered Brazil through the port of Vitória.

According to Roberto Santos, to date (and since last April), the Health Ministry has already spent about 20 million cruzados to combat the Aedes Aegyptus mosquito in Rio de Janeiro alone, where it is now under control. From the 700 cases a week in April and May, the number has now declined to 40 cases registered officially last week. The minister vehemently denied that there were cases of urban yellow fever in Rio and Sao Paulo, but he did not hide his concern about the "very troubling" increase of dengue fever in other regions of the country, such as Maceio, which has recorded 70,000 cases of infection in the last 60 days. In all, Brazil has 470,000 registered cases of dengue, 400,000 of which are in Rio de Janeiro alone.

Despite the swift injection of funds (the national plan for the simultaneous eradication of Aedes Aegypti and Aedes Albapictus will cost about 500 million cruzados in the initial phase), the problem will not be solved just with more money and more sanitarians. The health minister believes that the program to eradicate the carrier mosquitoes must be conducted in conjunction with ministries and public organs linked to various sectors of the nation's life.

6362

CSO: 5400/2076

BRAZIL

BRIEFS

**POLIO INCIDENCE ON RISE**--Poliomyelitis has already reached epidemic proportions in the Northeast and is spreading in alarming fashion in the other Brazilian states, because the public is no longer mobilized to respond to the eradication campaigns. This was admitted by Joao Batista Rizze Jr, national secretary for basic actions, of the Ministry of Health, in a lecture presented yesterday to employees of the Rio de Janeiro State Secretariat of Health, who will participate in the second stage of this year's campaign, on 16 August. According to Rizze, the public has been lulled by the decline in the number of cases (this is the 7th year in which campaigns have been conducted) and is not participating as actively, forgetting that 4 million children are born every year in this country, all of whom could catch the disease. To give some idea of the declining participation, in the first phase of immunization this year, on 14 July, about 86 percent of the 19 million children who constituted the target population were reached (this is a partial figure), whereas the ideal would be 90 percent. The Northeast presents the most serious picture, where 122 of the 148 cases of poliomyelitis confirmed this year were located. During 1985, there were 170 confirmed cases in the country, whereas this year, in addition to the 148 confirmed cases, another 401 cases have been reported and are awaiting confirmation. Of these, 275 cases are probable and 126 are suspected. In the Northeast, where 70 percent of the cases are located, the rate of coverage [for immunization] is between 50 percent and 70 percent, whereas the ideal is 90 percent. According to Rizze, the incidence has been increasing since 1984, since poliomyelitis is transmitted very rapidly. "When 1 percent of the infant population presents the symptom of paralysis, this means that thousands of people have been infected, although they do not manifest the specific symptom of the disease, which is the debilitation," Rizze said. The Health Ministry's national secretary for basic action reminded that a single dose of the vaccine does not immunize a child; three doses are required, or more, if necessary. [Text] [Sao Paulo O ESTADO DE SAO PAULO in Portuguese 22 Jul 86 p 12] 6362

**MENINGITIS IN PARAIBA**--Joao Pessoa--Yesterday, in the Federal University Hospital of Paraiba, meningitis took the life of its third victim in the locale of Carnauba (165 kilometers from Joao Pessoa, in Araruna Municipio), where eight meningitis cases have been clinically confirmed in just 15 days. Informed of this, the Health Ministry advised the Paraiba Health Secretariat to conduct laboratory examinations to identify the type of meningococcus and authorized mass vaccinations in the region, if the disease continues to spread. Physician Jose Iordan Sa Pires, general coordinator of health campaigns in the state government, said the recorded cases were cause for concern, but that they are restricted to a small area and thus do not yet constitute an epidemic. The last national vaccination campaign against meningitis was conducted 8 years ago. [Text] [Rio de Janeiro O GLOBO in Portuguese 11 Jul 86 p 6] 6362



POLIO CASES DETECTED--The Health Ministry has confirmed that out of 145 cases of polio reported during the first 5 months of this year throughout the country, 122 cases were found in the northeast. Joao Batista Risi, national secretary for prevention and education in the Health Ministry, said that the main reason for this increase in the number of polio cases in the country is that many children have not been vaccinated, or have received only one dose of the vaccine. Risi recommended that the parents of children under 5 have them vaccinated during the next vaccination campaign set for 6 August. During this campaign, the vaccines used will be slightly modified to more effectively combat the type 3 polio virus, which has been detected mostly in the northeastern region, in the states of Sergipe and Paraiba. [Summary] [Brasilia Radio Nacional da Amazonia Network in Portuguese 1000 GMT 23 Jul 86 PY] /8309

CSO: 5400/2077

INDIA

#### POLIO REPORTED SPREADING FAST IN AURANGABAD

Bombay THE TIMES OF INDIA in English 13 Jul 86 p 6

[Text] Aurangabad, July 12 (UNI)--Health officials of the Aurangabad medical college hospital, Zilla parishad and the municipal corporation at a special meeting here yesterday undertook preventive measures on a war-footing to check the fast-spreading polio disease in the district.

The medical college hospital dean, Mr A.M. Vare, said that hundreds of polio cases have been reported from different government health centres and private clinics in the district. Nine people have died within ten days in the hospital and 35 have been under treatment.

Dr Vare said the child patients admitted to different hospitals were under six years.

The number of patients below three years were more.

Dr Vare said a special team of doctors was set up and sent to different localities to trace polio patients and administer vaccines.

#### Filthy Atmosphere

He said, "we have instructed private medical practitioners and doctors on preventive measures and treatment. The medicos were advised not to give any injection to patients suffering from the disease."

It was also decided to create awareness about polio among people through newspaper advertisements and handbills, he said.

The dreaded child disease spreads mainly because of impure water and dirty atmosphere surrounding the locality and therefore, "we are concentrating on keeping the locality clean," he said.

Last month 65 patients were admitted to the hospital. Twelve of them died.

In 1984, 102 polio patients were admitted and only two died.

Last year 60 patients were admitted and two died. So far this year, 165 patients were admitted and about 20 died.



Anti-polio vaccine centres have been opened by a social organisation and some doctors in the city have agreed to give anti-polio doses free of cost.

/9317

CSO: 5440/108

INDIA

## SUSPECTED AIDS PATIENT BACK IN HYDERABAD

Bombay THE TIMES OF INDIA in English 7 Jul 86 p 12

[Text]

BOMBAY, July 6 (UNI).

**H**OUNDED by newsmen and nosy parkers, 24-year-old Indian microbiologist has taken refuge in his hometown of Hyderabad after reports that he was a suspected AIDS patient.

A UNI reporter investigating the story learnt reliably that the student, who was working for a doctorate in microbiology research in a prestigious American University, had undergone blood transfusion abroad two years ago as he was suffering from "haemophilia" (a blood disorder where the clotting factor is absent).

The American health authorities had informed the Indian government that they were sending the patient to Bombay by a particular flight. However, due to delays, this information did not reach in time. The patient arrived unnoticed and himself approached a government hospital for help.

"Doctor, help me I've got AIDS," he is reported to have told the casualty medical officer present in the emergency ward. The medical officer told the

patient that attention could be given to him only in Pune. Apparently, he was unaware that there was at least one centre in the metropolis having facilities for conducting AIDS screening.

### REPORT AWAITED

The student then proceeded to Pune and approached the Virology Institute. He was referred to a hospital for clinical examination. The student was admitted to the hospital a fortnight ago where he underwent several tests. A full report is being submitted by the doctor attending on him to the state health directorate.

As the news leaked, newsmen rushed to the hospital to file detailed reports giving the name of the patient.

The hospital attracted big crowds and even the hospital staff remained away as a big scare spread. The news reports had by then been circulated to national dailies also and this, by a quirk of fate, brought him relief.

His parents read about his condition and rushed to Pune recently to accompany him home.

/9317  
CSO: 5440/0181

INDIA

BRIEFS

CONJUNCTIVITIS EPIDEMIC--Calcutta, July 14--More than 40,000 cases of conjunctivitis have been reported from the Burrabazar area of the city, Mr Shyam Sundar Goenka, BJP councillor, claimed today. He alleged that the Calcutta Municipal Corporation (CMD) was not doing anything about it. The CMC health authorities however, claimed that they were not aware of such a large outbreak. [Text] [Calcutta THE TELEGRAPH in English 15 Jul 86 p 2] /9317

FIGHT AGAINST MALARIA--Shillong, July 12 (UNI)--An Integrated Vector Control Centre (IVCC) is being set up at Sonapur in Kamrup district of Assam to arrest the resurgence of Malaria in many parts of the State during the past three months. The disease which broke out in near epidemic form in the State, particularly in Nalbari and Darang districts, has in the past three months claimed 148 lives. The centre, to be manned by senior research officers and malariologists, will specifically study and monitor the falciparum's resistance to chloroquine and determine the causes of increase in falciparum malaria. [Text] [New Delhi PATRIOT in English 13 Jul 86 p 5] /9317

CHOLERA-AFFECTED AREA--Nasik, July 11--The collector, Mr Dinkarrao Patil, has declared the district as cholera-affected for six months and appointed special cholera control officers for the rural and urban areas, respectively. According to Mr Patil, some cases of cholera were detected in Malegaon taluka where four persons have died of gastro-enteritis. A few cases of gastro-enteritis have been reported in Surgana taluka. The collector said that the administrator of the Nasik municipal corporation would function as cholera control officer during the period. [Text] [Bombay THE TIMES OF INDIA in English 12 Jul 86 p 7] /9317

CHOLERA IN GUJARAT--Broach, July 10 (UNI)--The Broach district collector has declared Chhod village as cholera-affected as the entire Amod taluka was threatened by the epidemic. An official statement said here that the mamlatdar of Amod taluka had been appointed as cholera controlling officer. [Text] [Bombay THE TIMES OF INDIA in English 11 Jul 86 p 6] /9317

CSO: 5450/0183

MALAYSIA

BRIEFS

DENGUE FEVER FIGURES--Six cases of dengue fever, including one dengue hemorrhagic case were reported in Perak on 31 July, bringing the total number this year to 160 thus far. A state health official disclosed that a 7-year-old boy had been suspected of contracting hemorrhagic fever in Taiping. [Summary] [Kuala Lumpur Domestic Service in Malay 1230 GMT 1 Aug 86 BK] /9738

CSO: 5400/4401

MONTSERRAT

BRIEFS

**VIRAL HEPATITIS OUTBREAK**--There has been an increase in the number of cases of jaundice during the last four months, presumed to be an epidemic of infectious viral hepatitis. To date twenty five cases have been reported, most of them children between the ages of 5 and 15. Most patients are in the Northern area around the St John's area. No definite epidemiological pattern has emerged, and we are unable to identify the origin of the outbreak. Spread has been mainly through family contacts and contacts at school. Treatment consists mainly of bed rest, nutritional supplements with vitamins and high calorie foods and specific treatments. Two samples of blood are taken two weeks apart, and sent to CAREC in Trinidad for analysis. Most important is the isolation of identified cases, to control the spread of the virus. Children are to be kept away from school while they are infectious. The advice has not been taken by many families. Advice is also given on normal hygiene methods which are the first and most important aspects of control. [Excerpts] [Plymouth THE MONTSERRAT REPORTER in English 16 May 86 p 8] /9317

CSO: 5440/107

NETHERLANDS

INCIDENCE OF AIDS RISING RAPIDLY

Rotterdam NRC HANDELSBLAD in Dutch 9 Jul 86 p 2

[Report: "148 AIDS Patients in Netherlands—Almost Doubles Annually"]

[Text] Amsterdam 9 Jul--According to the most recent figures the Netherlands now has 148 AIDS patients, as compared to 120 on 1 April; an increase of 28 patients in 3 months. This development means a doubling in about 11 months, a trend which parallels findings in other countries.

However, that must not be a reason for complacency says Joop van Wijngaarden, the regional policy coordinator for AIDS. "Those 148 patients are actually just the tip of the iceberg. It is not at all clear how many people will get ill among the great number of people that are infected, especially homosexual men. The research of the past years and months have indicated that the number of infected people who in fact become ill is higher than the 10 percent which was initially used and which turned out to be much too optimistic. As the years pass, the possible incubation period of the disease appears to become longer and longer; on the basis of findings with transfusion blood it is now already put at an average of 5 years. That means that someone who gets an infection now and is not bothered by it at all might still become an AIDS patient 5 years from now. It also means that there is a greater group of potential patients," according to Van Wijngaarden.

The only answer which can be given to that at this time is: arrange for as effective as possible prevention, so that the progress of the disease is slowed down. At this moment that is still quite possible, as long as the percentage of infected male homosexuals is still below a certain level. How high that percentage is difficult to say, certainly on the national level. A random sample in Amsterdam came to 30 percent, but that is certainly not representative of the entire homosexual population. "This percentage must remain as low as possible; if it increases too much, prevention is no longer possible," says Van Wijngaarden.

The policy of the government is also important in this context: the increase in the funds expended for AIDS, not even considering patient care, might conflict with plans for economizing on public health. Van Wijngaarden: "I wonder whether sufficient thought is being given to the fact that an exponential growth in the number of AIDS patients in the future will require

many times the amounts which now must be expended for prevention. I hope that sufficient priority will be given to this, over and above the issues which are important in the short term, and that a structural post for AIDS will be included in the '87 public health budget. The 2 million guilders by which the post of Sexually Transmittable Afflictions was increased in the '86 budget on behalf of the fight against AIDS will certainly not be adequate in the future."

8700

CSO: 5400/2549



NICARAGUA

HEALTH MINISTRY NOTES SPREAD OF CONTAGIOUS DISEASES

Dengue Statistics

Managua BARRICADA in Spanish 12 Jul 86 p 1

[Text] The MINSA [Ministry of Health] has warned the Nicaraguan population about an increase in five infectious-contagious diseases. Meanwhile, in the city of Leon, a general alert has been declared because of a rise in the incidence of diarrhea.

The diseases included in this alert are: diarrhea, meningitis, measles, dengue, malaria, rubella, and rabies. To date the MINSA has found 299 positive cases of dengue fever. Of these, 22 patients are being treated as presumed cases of hemorrhagic dengue.

Ministry of health sources indicated that the climate changes in May and June have increased the incidence of these diseases.

Last year a half million persons suffered from dengue, and 16 persons died from its hemorrhagic variety.

Health Alert in Leon

Managua BARRICADA in Spanish 12 Jul 86 p 8

[Article by Noel Mendoza]

[Text] Leon. A state of alert about an epidemic outbreak of diseases, primarily diarrhea, measles, rubella, meningitis, and dengue, has been declared by the regional MINSA and PSIN [Sandinist National Liberation Front] officials and the Leon mass organizations in Region II of Nicaragua. An appeal has been made to the population of western Nicaragua to cooperate in efforts to clean up and eliminate possible breeding sources for the mosquitoes which transmit dengue fever.

Dr Juan Antonio Quant, MINSA's regional delegate, stated that there has been a 400 percent increase in cases of diarrhea among children; in addition, 52 cases of measles have been reported, and "Aedes aegypti" mosquitoes have been spotted within a radius of 21 blocks from the Fundeci, Guadalupe, Villa 23 de Julio, and San Felipe districts.

Quant noted that last year 60 percent of Leon's population suffered from the ravages of "break-bone fever," as the first stages of the disease transmitted by the "Aedes Aegypti" mosquito are known. This disease leaves the person with a lowered resistance, and susceptible to contracting hemorrhagic dengue.

#### Steps Taken for Health Centers

To cope with the epidemic outbreak of these diseases, the authorities have directed health centers to extend their hours of service to the public. The William Rodriguez health center and the Barrio Subtiava health center will be open from 0700 to 2000 without interruption, and on Saturdays from 0700 until 1100.

Because of its strategic location, the Perla Norori health center will remain open from 0700 to 2200, and on Saturdays from 0700 until 2000 without interruption.

#### Meningitis

There have been 15 new cases of meningitis reported this week. This disease is affecting school-age children.

Dr Quant urged parents not to overuse household remedies or to resort to self-medication, especially for meningitis, as there is no appropriate medication for this disease. The best thing is to bring the patient to the nearest health center. In addition, he recommended taking proper hygienic precautions, such as sterilizing all household utensils.

He said that each citizen should serve as a people's brigade member. If not, he warned that "the results could be catastrophis for this region."

The women's group, AMNIAE, immediately urged its members to conduct door-to-door information campaigns. It also asked market vendors to keep their stalls clean and to use special care in handling foods sold to consumers.

7679

CSO: 3248/581

PEOPLE'S REPUBLIC OF CHINA

## HEPATITIS A VIRUS CAUSING CYTOPATHIC EFFECTS ISOLATED

Beijing CHINESE MEDICAL JOURNAL in English Vol 99, No 5, May 86 pp 387-392

[Article by Wu Shen [0702 1957]; Ju Liancai [7263 6647 2088], PLA 302 Hospital, Beijing; Shao Huixun [6730 1920 6064], Municipal Health and Anti-Epidemic Station, Beijing; Zhang Xitan [1728 5045 0982], Military Academy of Medical Sciences, Beijing; Meng Qinghai [1322 1987 3189], Heilongjiang Health and Anti-Epidemic Station, Heilongjiang; and Li Xueguang [2621 1331 0342], Fentai District Health and Anti-Epidemic Station, Beijing]

### [Text]

A strain (named BJ-1) of hepatitis A virus (HAV) causing cytopathic effects (CPE) has been isolated in A549 cell cultures from a fecal specimen of an infant with hepatitis A. Hepatitis A antigen (HAAg) was detectable in about 50% of the cells by immunofluorescence (IF) assay. The viral antigenicity was specifically identified by monoclonal anti-HAV and chimpanzee reference antiserum to HAV (NIH). HAV particles in crystal arrangement were observed in cell cytoplasm by electron microscopy in ultrathin sections. The particles appeared both "empty" and "full". It was observed that many 27-30 nm virus particles were aggregated by convalescent human hepatitis A sera and chimpanzee HAV antisera observed by immune electron microscopic (IEM) examination. BJ-1 HAAg could be detected on day 34 after inoculation at the initial passage. The virus titers increased and the virus replication cycle shortened with serial passages. The highest TCID<sub>50</sub> was 10<sup>4.0</sup>/0.1 ml and the shortest replication cycle 2-3 days. IF kit consisting of BJ-1 HAV infected A549 coverslip culture and sheep fluorescence antibody to human IgM were made to detect anti-HAV IgM. Comparing the BJ-1 IF with the Abbott EIA HAVAB-M kit, the coincidence rate was 98.4% (246/250).

The specific diagnosis of hepatitis A was limited, because production of the HAAg diagnostic kit using purified HAAg from artificially infected marmosets and chimpanzees is expensive in foreign countries and obtaining

HAAg fecal specimens is difficult in China. So type classification of viral hepatitis and epidemiological investigation of hepatitis A is very limited. The successful propagation of HAV in cell culture was first reported by Provost and Hilleman<sup>1</sup> in 1979. After this, several similar reports were made,<sup>2-5</sup> but the source of HAAg was still unresolved. Labile serial passage, long replication cycle and low HAV titers in cell culture were the major reasons for failure. Therefore, it is difficult to mass-produce the HAV diagnostic kit. We propagated HAV in several cell lines and the BJ-1 strain causing CPE has now been isolated in the A549 cell line. The isolation and identification of BJ-1 are reported in this paper.

### MATERIAL AND METHODS

Hepatitis A virus. 10% stool extract (Long A-1, fecal specimen from an infant with typical hepatitis A provided by Heilongjiang Health and Anti-Epidemic Station) containing a large number of HAV particles by IEM examination was clarified by low speed centrifugation. The supernatant, into which 1,000 µ/ml penicillin and 1,000 µg/ml streptomycin were added, was diluted 10 fold with maintenance medium before inoculation.

**Cells.** A549 cell line was obtained from the Institute of Virology, Hubei Medical College and the Fifth Institute of the Military Medical Academy of Sciences. The growth medium was a Eagle's medium containing 10% calf serum, 100 u/ml penicillin, 100 µg/ml streptomycin and 100 µ/ml kanamycin, pH 7.2-7.6. The maintenance medium was Eagle's medium containing 4% calf serum, penicillin, streptomycin and kanamycin as above.

**Virus Propagation.** Cultivation was done in 10 ml flasks or 2 ml tubes containing coverslips. Confluent monolayers of cells were drained, washed three times with Hank's solution and inoculated with 0.4 ml of 1% stool supernatant per tube or 2 ml per flask, and absorbed at 32 °C for 2-4 hrs. They were examined by microscopy and shaken every 30 minutes. Maintenance medium was again added (8 ml per flask, 1.6 per tube) as soon as the cells contracted and cultivation continued at 32 °C. Examined by microscope daily, maintenance medium was changed every 2 days. Specimens were passaged and HAAg detected 20 days later.

**Passage.** As the cells became a confluent monolayer, the maintenance medium was discarded, the cells washed three times with Hank's solution, 2 ml of 0.25% trypsin solution added (pH 7.8) per flask, when the cells contracted they were drained, growth medium was added to resuspend the cells which were then divided into 2 flasks. Cultivate at 36°C. When the cells were confluent, the growth medium was changed to maintenance medium, incubated at 32°C.

**Indirect immunofluorescence assay to detect HAAg.** Anti-HAV IgG positive human convalescent hepatitis A sera detected by Abbott kit at 1:50-1:100 dilutions were employed as the first antibody. Sheep fluorescent antibody against human IgG (produced in our laboratory and Shanghai Institute of Biological Products) was used at 1:5,000 dilution of Evans blue in PBS, at 1:8-1:16 titers. The infected coverslip cultures were washed three times with PBS (0.01 M, pH 7.2-7.4), fixed with cold acetone, washed with tap water for 5 minutes, rinsed with deionized water for 1 minute, dried with filter paper, then one drop of the first antibody was

added and the sample put in a damp box at 37 °C for 60 minutes. Washed and dried as above, one drop of fluorescent antibody was added and the sample incubated at 37° C for 30 minutes in a damp box. After washing and drying again as above, the coverslip cultures were sealed with buffered glycerol (pH 8) or sealing glue, and examined by Olympus fluorescence microscope. Normal coverslip cultures were used as control.

Examination of anti-HAV IgM, see reference 13. Electron microscopy of ultrathin sections, see reference 10.

**Immune electron microscopy.** As CPE appeared in about 50% of the infected cells, the cell cultures were frozen at -60°C and thawed five times, intermittently treated for 3 minutes by ultrasonic wave (23,000 HZ frequency, 20 µm amplitude). After centrifugation at 10,000 rpm for 1 hour, 0.1 ml of a 1:40 dilution of human convalescent hepatitis A serum was added to 0.9 ml of supernatant. The mixture was incubated at 37 °C for 1 hour and then held at 4 °C overnight. Centrifuged at 28,000 rpm for 1 hour, the pellets were resuspended in 0.1 ml PBS. A drop of suspension complex was placed onto a carbon-coated grid. After being absorbed the specimens were negative-stained with 3% phosphotungstate (pH 6.8). A DXB1-12 electron microscope was used.

**Identification of specificity.** The following tests were used to identify the viral specificity: indirect IF assay with paired chimpanzee serum; immunofluorescence blocking assay with paired chimpanzee serum; IEM examination with paired chimpanzee serum; comparison of BJ-1 IF kit and Abbott EIA HAVAB-M kit in detecting anti-HAV IgM; IF (indirect) assay with monoclonal anti-HAV IgG3;<sup>12</sup> neutralization tests with paired serum, equal volumes of 1:10 diluted virus suspension and antiserum were mixed, incubated at 37 °C for 1 hr and kept at 4 °C overnight. Then 0.2 ml of the mixture were inoculated into A549 cell culture, incubated at 32 °C and neutralized with enteroviruses (poliovirus type 1-3; echovirus type 1-9, 11-15, 17-27, 29-34; Cox virus type A9, B1-6) antisera (using 40 neutralization units for antisera and 100-1,000 TCID<sub>50</sub> 0.1 ml for virus).

Chimpanzee sera (NIH, cat. No. V811-501-573) were obtained from Dr. Hu (Shanghai Health and Anti-Epidemic Station). Ascitic fluid of hybridoma and control ascitic fluid were given to us by the Liver Diseases Center, General Hospital, Beijing Military Area. Sheep fluorescent antibody to mouse IgG was from Dr. Li (the Fifth Institute of the Military Medical Academy of Sciences). Fluorescent antibody (Denmark) to mouse IgG was a gift from Dr. Gu (Chinese Academy of Medical Sciences). 2BS cells were supplied by the Infantile Paralysis Laboratory, Institute of Biological Products, Ministry of Public Health. The HM-175 virus strain was obtained from the Hepatitis Laboratory, Institute of Virology, Chinese Preventive Medical Center. Enterovirus antisera was produced by the Kunming Institute of Biology, Chinese Academy of Medical Sciences.

**Viral physico-chemical and biological properties.** Virus sensitivity to ether and low pH were tested as described in reference 11. Virus heat stability was measured by incubating a virus suspension at 56 °C for 30 minutes and 60 minutes and at 37 °C for 60 minutes. Hemagglutination test was done according to that in reference 11. Viral sensitivity in mice was conducted by subcutaneous and intracerebral injection of 0.02 ml of a 1:100 dilution of virus suspension. 18 hours old new born mice were used for this purpose. Virus sensitivity in cells was tested in primary human embryonic kidney cells, primary human embryonic liver cells, serially passaged 2BS cells and SL7 cells

(The SL7 cells were given by the Shanghai Institute of Biological Products), incubated at 32 °C.

## RESULTS

**Virus isolation.** Minute immunofluorescent granules were detected in some A549 cells on day 34 after virus inoculation at initial passage. Some tadpole shaped cells were detected on day 15 at passage 2. Both the number of affected cells and number of fluorescent granules increased with time. The cells contracted to small spheres and peeled off from the flask wall. Passage 3 culture fluid also had CPE, demonstrating that there were free viral particles in it. This CPE was observed from passage 3 through passage 19 (Fig 1). The CPE appearance time shortened with increased passages. The virus propagation cycle also shortened, being only 2-3 days at passage 6. CPE (+) was observed at 24 hrs and peak CPE (++) was reached 48-72 hrs after inoculation. 50% of the cells were IF positive, they contained immunofluorescent granules. The number and brilliance of the fluorescent granules indicated the amount of virus propagated in the cell cytoplasm. IF negative cells and normal cells were purplish red with no specific fluorescent granules observed in them (Fig 2). Virus titers were  $10^{-3}$  at passage 3 and  $10^{-5}$  at passage 6 and 8. The CPE and IF results were in good agreement. CPE was also shown in primary human embryonic kidney cells (Fig 3), and IF was positive (Fig 4).

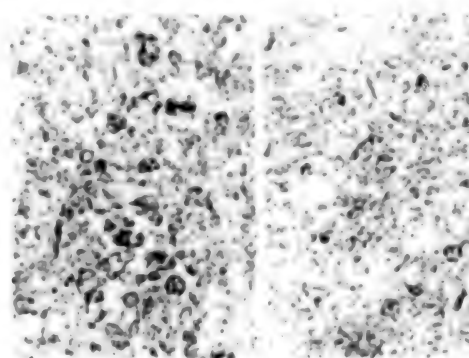


Fig 1. (a) BJ-1 strain infected A549 cells, tadpole shaped, 48 hrs after inoculation. (b) Normal A549 cells.  $\times 300$ .

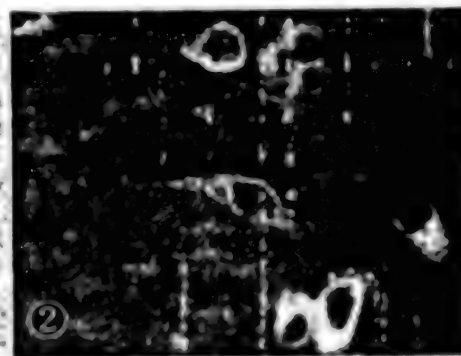


Fig 2. Immunofluorescent granules are observed in A549 cell cytoplasm infected with BJ-1 strain 48 hrs after inoculation.  $\times 1,600$ .



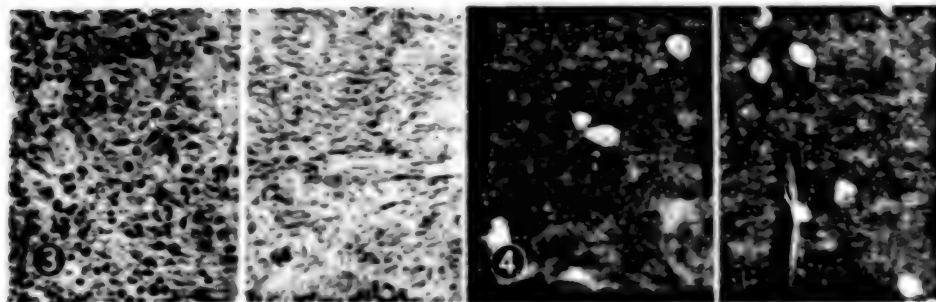


Fig 3. BJ-1 strain infected primary human embryonic kidney cells 48 hrs after inoculation on the left and normal cells on the right.  $\times 300$ .

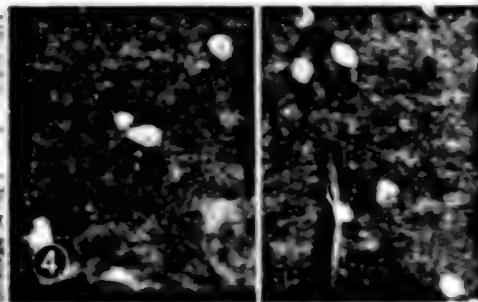


Fig 4. BJ-1 strain infected primary human embryonic kidney cells 48 hrs after inoculation. Specific fluorescent granules are seen in the cell cytoplasm.

**Virus identification. Virus morphology.** 27-30 nm particles in crystal arrangement were found in infected cell cytoplasm by electron microscopy of ultrathin sections. Both "empty" capsids and "full" intact virions were seen. The morphology and size of the viruses are charac-

teristic of HAV (Fig 5). Identical virus particles were observed by IEM examination. Antibodies were coated on the surface of viruses and particles were connected by antibody bridges. This is specific antigen-antibody aggregation reaction (Fig 6).

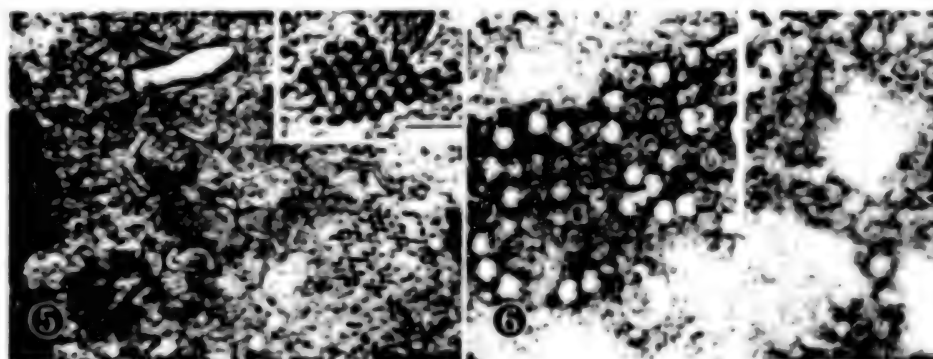


Fig 5. Electron micrographs of ultrathin sections of BJ-1 infected A549 cells 72 hrs after inoculation. The viruses are in crystal arrangement replicated in the cell cytoplasm.  $\times 75,000$ . "Full" virions are shown on the upright.  $\times 150,000$ . Bar = 100 nm.

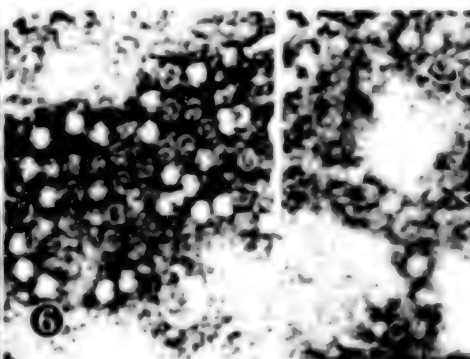


Fig 6. BJ-1 virus particles in extract 72 hrs post-infection, cell culture aggregated with anti-HAV (left) and chimpanzee anti-HAV (right).  $\times 150,000$ . Bar = 100 nm.

**Virus specificity.** IF assay with paired chimpanzee sera: IF assay was negative with preinfected serum and positive in postinfection serum. 40-50% of the cells were IF positive. This indicated that immunofluorescence is related to HAAg distribution in infected cells. IF blocking

assay with paired chimpanzee sera: the post-infected serum completely blocked but the preinfected serum did not. IEM examination with paired chimpanzee sera: the post-infected serum aggregated virus (Fig 6, right) but the preinfected did not. Comparison of BJ-1 IF kit and Abbott

EIA HAVAB-M kit in detection of anti-HAV IgM: the results are listed in Table 1 which shows that HAV in both kits have identical antigenicity. The coincidence rate is relatively high. Identification with monoclonal anti-HAV IgG 5: Table 2 indicates that BJ-1 and HM-175 have identical antigenicity, but BJ-1 is stronger than HM-175 by IF assay. Neutralization tests with paired sera: anti-HAV positive sera could neutralize BJ-1 and CPE and IF assay was negative. In contrast, anti-HAV negative sera could not neutralize BJ-1 and CPE, and IF assay was positive. This demonstrated that BJ-1 caused CPE was specific and BJ-1 could be neutralized by anti-HAV sera. Neutralization with enteroviruses antisera: all the 41 enteroviruses antisera could not neutralize BJ-1, CPE, and IF assay was positive.

**Viral physico-chemical and biological properties.** The virus was resistant to ether, indi-

cating that it has no envelope. The virus was stable to pH 3 and pH 5 treatment and labile at 56 °C for 30 minutes and 60 minutes, but stable at 37 °C for 60 minutes. No aggregation was found with human type "O" erythrocytes. 18 hours old new born mice were nonsusceptible to the virus. Primary human embryonic kidney cells and primary human embryonic liver cells were susceptible to the virus, causing CPE. The 2BS cell line and SL7 cell line were nonsusceptible.

## DISCUSSION

The BJ-1 strain revealed identical antigenicity with other HAV strains reported previously morphologically, serologically and biologically, especially when compared with specific reference standards (paired chimpanzee sera, monoclonal anti-HAV IgG, Abbott kit, HM-175). It was demonstrated by our series of identifications that BJ-1 caused CPE was specific and there was no evidence of other viruses. BJ-1 causes CPE in cell culture, and the dynamics of the virus replication can be observed by microscope. This is advantageous to the investigation of the pathogenesis, prevention and treatment of HAV hepatitis. BJ-1 propagation pattern in A549 is similar to that of HAV isolated by Kojima et al in FL and Vero cell lines.<sup>6</sup> They are rapid propagating strains. The phenomenon of self-limiting replication was observed. Only half of the cells were positive at peak virus propagation. The number of positive cells decreased with incubation time. The reasons for this are still unknown and need further study.

BJ-1 strains possess three marked advantages over HAV strains previously reported. First, it causes obvious CPE in A549 cell culture, primary human embryonic kidney cells and primary human embryonic liver cells, so the dynamics of virus replication can be observed directly by microscope. Second, virus propagation is rapid and the replication cycle is short in cell culture. CPE appeared 24 hrs after inoculation and peaked at 48-72 hrs. Finally, immunofluorescent reaction is strong enough for detection of anti-HAV IgM and IgG by indirect IF assay.

HAVAB-M IF kits have been prepared and employed in most parts of China.

Table 1. Comparison of HAVAB-M EIA kit with HAVAB-M IF kit detection of anti-HAV IgM

IF kit		Abbott EIA	HAVAB-M kit	Coincidence rate
		positive	negative	
IF kit	Positive	157	4	98.4%
	Negative	0	88	

Table 2. Results of identification of two HAV strains with monoclonal anti-HAV IgG3

	Dilution	HAV		Control of cells	
		BJ-1	HM-175	A549	2BS
A614* ascitic fluid	1:10	++**	+	—	—
	1:50	+	—	—	—
	1:100	—***	—	—	—
Control mouse ascitic fluid	1:10	—	—	ND	ND
	1:50	—	—	ND	ND
	1:100	—	—	ND	ND

\* A 614 is an anti-HAV IgG3-secreting hybridoma.

\*\* + represents positive reaction.

\*\*\* — represents negative reaction.



**Acknowledgement:** Others who participated in this study include: Tong Shao-nan, Qian Ji-yuan, Song Zhi-ying, Zhang Rui-shan, Wang Zhen-shan, Mao Pan-yong, Liang Shi-zhe, Li Quan-gen, Zhao Xin-ru, Fan Wen-guang, Li Yuan-zhi, Xu Qing, Bai Yan-ping, Zuo Xiao-gang, Xing Yu-lan, Liu Li-rong, Shen Li, Zhou Shao-lian and Dou Feng-qin. We are grateful to all the persons and units mentioned for supplying us with cells, virus and antisera and assistance in virus identification.

#### REFERENCES

1. Provost PJ, et al. Propagation of human hepatitis A virus in cell culture in vitro. *Proc Soc Exp Biol Med* 1979; 160:213.
2. Frosner GG, et al. Propagation of human hepatoma cell line. *Infection* 1979; 7:303.
3. Flehming B. Hepatitis A virus in cell cultures. 1. Propagation of different hepatitis A virus isolates in a fetal rhesus monkey kidney cell line (FrHK-4). *Med Microbiol Immunol* 1980; 168:239.
4. Gauss-Muller V, et al. Propagation of hepatitis A virus in human embryo fibroblasts. *J Med Virol* 1981; 7:233.
5. Locarnini SA, et al. Restricted replication of human hepatitis A virus in cell cultures: intracellular biochemical studies. *J Virol* 1981.
6. Kojima H, et al. Propagation of human hepatitis A virus in conventional cell lines. *J Med Virol* 1981; 7:273.
7. Deinhardt F, et al. Propagation of human hepatitis A virus in cell lines of primary human hepatocellular carcinomas. *Prog Med Virol* 1981; 27:109.
8. Hu Mengdong [5170 1322 0392], et al., ... SHANGHAI YIXUE [SHANGHAI MEDICINE] 1982; 5(5):249.
9. Hu Mengdong, et al., ... ZHONGHUA CHUANRANBING ZAZHI [CHINESE JOURNAL OF INFECTIOUS DISEASES] 1984; 2:109.
10. Wu Shen, et al., ... ZHONGHUA YIXUE ZAZHI [NATIONAL MEDICAL JOURNAL OF CHINA] 1982; 62(3):146.
11. Chinese Academy of Medical Sciences, Prevention and Treatment of Epidemic Diseases Research Institute, edited. "Frequently Seen Virus Laboratory Techniques," Science Press, Beijing, 1978; 292-293.
12. Meng Qianghua [1322 1730 7520], et al., "Monoclonal Antibody Against Hepatitis A Virus Produced by Hybridoma Techniques," *ZHONGHUA CHUANRANBING ZAZHI* 1986; 4(1):5-8.
13. Wu Shen, et al., ... BINGDU XUEBAO [JOURNAL OF VIROLOGY] 1985; 1(4):308.

PEOPLE'S REPUBLIC OF CHINA

## INFECTION OF LEGIONELLA PNEUMOPHILA

Beijing CHINESE MEDICAL JOURNAL in English Vol 99, No 5, May 86 pp 401-406

[Article by Liu Shuiqu [0491 3055 3255], Department of Infectious Diseases, First Teaching Hospital, Zhejiang Medical College, Hangzhou; Sun Guoxiang [1327 0948 4382], Anti-epidemic Station of Zhejiang Province, Hangzhou; Yang Yongping [2799 3057 1627], Institute of Infectious Diseases, Zhejiang Medical College, Hangzhou; and Ma Yilin [7456 0076 2651], Department of Infectious Diseases, First Teaching Hospital, Zhejiang Medical College, Hangzhou]

[Text]

From October 1984 to February 1985, 109 lots of sera were obtained from 68 patients with pneumonia of unknown origin and detected by IFA's technique. Of the 109 lots, 101 were from 60 hospitalized patients and out-patients in the acute or convalescent stage. Five hospitalized patients were found to have titers of antibody against legionella pneumophila up to the serologic diagnostic standard, i.e., 4-fold or  $\geq 1:256$ . The titers of 8 lots from 8 patients discharged for 4-5 months were either negative or very low. It is the first time legionellosis was found in Zhejiang province.

Legionellosis was first found in 1976 in the USA. It is an acute infectious disease of the respiratory system and the pathogen is legionella pneumophila (LP) recently recognized as a gram-negative bacillus. This disease has been found in many countries. In 1983, the first case in China was demonstrated by means of indirect fluorescent antibody (IFA) in Nanjing,<sup>1</sup> and LP strain was then isolated.<sup>2</sup> From October 1984 to February 1985, 109 lots of sera were obtained from 68 patients with pneumonia of unknown ori-

gin. The samples were all tested by IFA's method. Of 109 lots, 101 were obtained from 660 hospitalized patients or out-patients in the acute and convalescent stages. In 5 of the 60 hospitalized patients the antibody titers against LP reached the serologic standard, that is, up to 4-fold or  $\geq 1:256$ . The titers of 8 lots from patients who had already recovered and been discharged for 4-5 months were either negative or very low. Thus legionellosis was first confirmed in Zhejiang, China.

## MATERIAL AND METHODS

The sheep against human IgG fluorescent antibody [Hp (82), Hu No. (7)30] was supplied by Shanghai Institute of Biological Products. Its specific staining unit was 1:10. The fluorescent microscope used was an Austrian made polyver widefield photomicroscope. Other material used included polyacrylstyrene plastic glass plates, Philadelphia I (Ph-I) LP supplied by Nanjing Anti-Epidemic Station, and LP Ph-I antisera.

The patients' sera were tested by IFA's method.

## RESULTS

Bacterial bodies showing strong green fluorescence were 4-plus (++++), less strong 3-plus (+++), green-yellow 2-plus (++) and yellow 1-plus (+). In our group, only bacterial bodies of more than 2-plus were reported as positive titer. Titers  $\geq 1:256$  were regarded as positive.

Of 68 cases 60 were hospitalized patients or out-patients. 101 lots of sera were obtained from 60 hospitalized or out-patients, antibody titers against LP were found to have reached the serologic diagnostic criteria in 5 patients, 3 being 4-fold, 1 1:256 at first, then 1:128 twice, 1 1:128 and 1:256 in the beginning but 1:16 and 1:64 twice later. The antibody titers of 8 sera lots from 8 patients who were discharged after recovery for 4-5 months were either negative or very low.

## CASE REPORT

**Case 1.** A 64-year-old woman was admitted on November 5, 1984 after 6 days of fever, cough, headache, nausea, and vomiting. She passed loose stools 3 to 6 times daily, without abdominal pain. Little white sputum. The temperature swung between 39.4 to 40 C, pulse 108 min, respiration 23 min, and blood pressure 120/60 mm Hg. A few dry rales were heard in the right lung. Other physical examinations were normal. Laboratory findings showed the stool was negative; urine protein positive (+), urine granular tube cast(+) with a few pus cells, WBC 10,000/mm<sup>3</sup> (N 88%, L 12%); liver function normal; creatinine 1.9 mg/dl; CO<sub>2</sub>CP 34 vol/dl; BUN 18 mg/dl; serum electrolytes K<sup>+</sup>, 4.1 mEq/L, Na<sup>+</sup>, 138 mEq/L, Cl<sup>-</sup>, 98 mEq/L, and Ca<sup>++</sup>, 9 mg/dl; ESR 120 mm/hr; and routine blood culture negative. Chest X-ray showed pulmonary infiltration in the right upper lobe. IFA's titers against LP serogroup I (IFA-I) were 1:4 on disease day 14, 1:32 on day 31, and 1:128 on day 81. Erythromycin combined with chloramphenicol was given for three

days. The temperature began to decline on the 3rd day of drug administration. Then the therapy changed to ampicillin combined with penicillin G for five days and the fever dropped further normalizing on the 11th day of treatment. Infiltration of the lung further improved. At last, erythromycin combined with chloramphenicol was administered again for 8 days. She recovered and was discharged on the 35th day.

**Case 2.** A 59-year-old woman was admitted on December 19, 1984 after 3 days of chills, fever, cough with bloody sputum, dyspnea, myalgia, and palpitations. Bloody sputum was spit the second day of the attack. Generally, the amount of white mucous sputum was little. The body temperature was between 37 and 38.5 C, heart rate 100 min, respiration 21/min, and blood pressure 110/70 mm Hg. There were moist and dry rales in the right lung. Other physical examinations were normal. Laboratory findings included: stool and urine negative, WBC 9,900/mm<sup>3</sup> (N 90%, L 9% and E 1%), Hb 11 g/dl, platelets 53,000/mm<sup>3</sup>, serum total protein 7 g/dl (albumin 3.6 g/dl, globulin 3.4 g/dl), SGPT normal, serum electrolytes K<sup>+</sup> 4.2 mEq/L, Na<sup>+</sup> 134 mEq/L, Cl<sup>-</sup> 104 mEq/L, Mg<sup>++</sup> 1.8 mEq/L, and ESR 57 mm/hr. The routine sputum culture was sterile. Chest X-ray showed a bilateral inflammatory infiltration. IFA-I was 1:32 on disease day 8, 1:128 on days 24 and 50. At the beginning erythromycin was used for 7 days, resulting in gradual decline of temperature. After amikacin and lincomycin were given for 14 days, she recovered and was discharged from the hospital on the 27th day.

**Case 3.** A 72-year-old male patient with chronic bronchitis for over a decade was admitted on January 12, 1985 after 3 days of cough, chest stuffiness, and fever. Blood was found in his sputum one day before hospitalization. The sputum was generally white and mucoid and seldom yellow. On admission he felt abdominal distension and pain, but had no vomiting or diarrhea. He was suspected of having lung cancer. Breathing sound was decreased and moist rales were heard in the right upper lung. The liver was palpable, 2 and 3 cm below the right costal margin and the ensiform process. Other physical examinations were normal. The vital signs were temperature 35.5-38.4 C, pulse 90 min, respiration 23 min, and blood pressure 110/70 mm Hg. Laboratory findings showed that stool, urine and

sputum routines were normal; WBC 26,600 with N 94%, L 5% and E 1%; serum total protein 6.7 g/dl with albumin 3.8 g/dl and globulin 2.9 g/dl; serum electrolytes K<sup>+</sup> 4.6 mEq/L, Na<sup>+</sup> 141 mEq/L, Cl<sup>-</sup> 94 mEq/L, and Ca<sup>++</sup> 8.4 mg/dl; ESR 66 mm/hr; creatinine 1.8 mg/dl; CO<sub>2</sub>CP 34 vol/dl; and BUN 25.6 mg/dl. Cancer cells were negative in the sputum. Routine sputum culture showed normal flora. EKG showed sinus rhythm, but hypertrophy of the right cardiac ventricle. Chest X-ray suggested inflammatory infiltration of the right upper lung (Fig 1). IFA-I was 1:4 on disease day 6, 1:8 on day 13 and 1:256 on day 20. He received medecamycin (derived from erythromycin) combined with gentamicin for 16 days, and his fever began to drop on the 6th day. He recovered and was discharged on the 23rd day of admission.

**Case 4.** A 49-year-old male with 20 years' chronic bronchitis was admitted on December 20, 1984, after one month of right chest pain, half a month of mild fever and difficult breathing. Strong thoracodynia occurred when coughing or breathing deeply. The vital signs were temperature 36.7-40 C, pulse 100/min, respiration 25/min, and blood pressure 110/70 mm Hg. Vocal fremitus was decreased and dull resonance heard in the right chest. Dry and moist rales were heard in the lung. The liver was tender and palpable 3 and 4.5 cm below the right costal margin and the ensiform process. Laboratory findings included stool negative; urine protein positive (+++) (WBC 0-2/HP and a few pus cells); WBC 24,500 with N 98% and L 2%; Hb 13 g/dl; platelets 310,000/mm<sup>3</sup>; ESR 96 mm/hr; AFP negative; serum total protein 5 g/dl with albumin 2.1 g/dl and globulin 2.9 g/dl; serum electrolytes K<sup>+</sup> 4.4 mEq/L, Na<sup>+</sup> 144 mEq/L, Cl<sup>-</sup> 102 mEq/L; AKP 14 u; and LDH 325 u. Right chest fluid was muddy, containing leukocytes 5,640 (N 98%, L 2%), erythrocytes 80. Rivalta's test was strongly positive. Cancer cells were not found. Leukocytes and erythrocytes in the liver pus were 54,720 (N 87%, L 13%) and 27,200. Ameba was negative. Routine cultures of blood, sputum, chest fluid and liver pus were sterile. PPD test was strongly positive. Chest X-ray showed inflammatory shadows in both lungs and pleural effusion and hypertrophy in the right thoracic cavity (Fig 2). Explorations by ultrasound type A and B showed pleural effusion and liver abscess, but no cancer waves. EKG was normal. IFA-I was 1:128 on disease day 34, 1:256 on day 44, 1:16 on day 90,

and 1:64 on day 98. After ampicillin combined with cloxacillin was given for 12 days leukocyte count fell to normal range. When the therapy was changed to cefamandole on the 13th day fever remained high. After pleural effusion and liver abscess were drained by centesis on the 20th day the fever gradually dropped to normal. He was cured and discharged from the hospital on the 82nd day.

**Case 5.** A 40-year-old female patient with chronic bronchitis of 5 years' duration was admitted on December 20, 1984 because of 2 months of cough with sputum and 1 month of fever and hemoptysis. In the early stage of the disease, sputum was whitish, about 20 ml per day, including foam. Chest X-ray showed an abnormal shadow in the lower lung. The patient was thus diagnosed a case of pneumonia. Penicillin G and streptomycin were given with no effect. 124 days after onset of the disease, she began to have low-grade fever, night sweats, increasing amounts of bloody and pussy sputum which gradually became brownish yellow and foul. Chest X-ray showed a lung abscess in the left lower lobe (Fig 3). Gentamicin was of no effect and fever and bloody and pussy sputum remained as usual. The vital signs were temperature 36.2-39.2 C, pulse 100/min, respiration 21/min and blood pressure 134/80 mm Hg. No rales were heard in the lungs. Other examinations were normal. Laboratory examination found WBC 10,500 with N 81%, L 16% and E 3%, Hb 10.3g/dL, and platelets 176,000/dl. Serum electrolytes were K<sup>+</sup> 3.9 mEq/L, Na<sup>+</sup> 139 mEq/L, Cl<sup>-</sup> 92 mEq/L, Ca<sup>++</sup> 8.2 mg/dl, and Mg<sup>++</sup> 2.1 mEq/L. BUN was 8.8 mg/dl, creatinine 0.9 mg/dl, ESR 95 mm/hr, and liver function normal. Stool examination was normal. Urine protein was traced and a few RBC and pus cells were found. Routine sputum culture yielded normal flora. In the sputum no tubercular bacilli and cancer cells were found. EKG showed sinus rhythm. LP culture of the lung tissue was negative. IFA-I was 1:256 on disease day 102 and 1:128 on days 103 and 133. She received penicillin G, streptomycin, ampicillin, cefamandole, gentamicin, oxacillin, amikacin, and metronidazole, etc, but the effect was poor. Her fever began to withdraw on the 3rd day of admission when treatment was changed to cefazolin on the 36th day. Her temperature was normal on the 13th day of cefazolin treatment. Resection of the lung abscess was performed later. She recovered and was discharged on the 105th day.

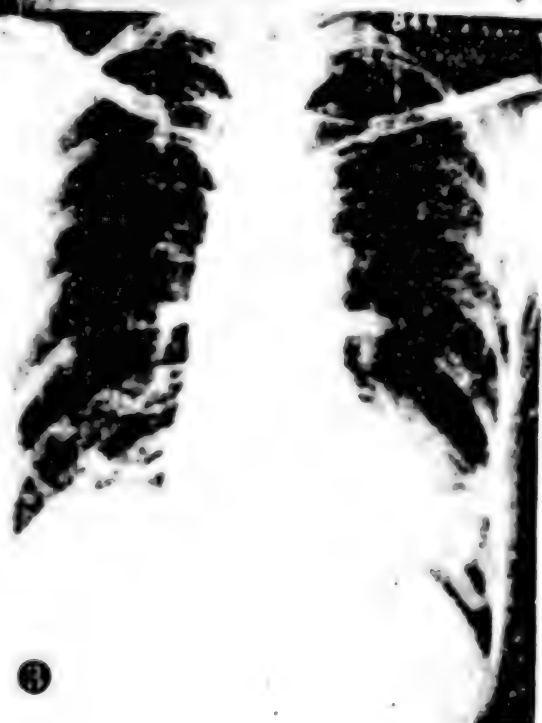


Fig 1. (Case 3) Pneumonia in the right upper lobe.

Fig 2. (Case 5) Abscess in the left lower lung.

Fig 3. (Case 4) Bilateral pneumonia complicating right effusion pleurisy and liver abscess.



## DISCUSSION

Legionellosis in Zhejiang province is first confirmed by IFA's technique. This is the second report of this disease in China. In our series, all antibody titers against LP were 4-fold or  $\geq 1:256$ . Because Ph-I is a predominant pathogenic strain and we detected only Ph-I in our study, the pathogenic strains of the 5 cases were presumably wholly Ph-I. Up to the present altogether 23 species of PL have been found throughout the world.<sup>3</sup> All 5 legionellosis patients in our series suffered from pneumonia, accounting for 8.3% of the pneumonia cases of unknown origin (5/60). The titers of Cases 1-3 progressively increased up to 4-fold the serum diagnostic standard. Of the 3 cases, 2 (Cases 1 and 3) had titers increasing up to 32- (Case 1) and 64-fold (Case 3). Sera were obtained from 3 cases (Cases 1-3) on the 6-14th days of disease onset, and from the other 2 cases on the 34th (Case 4) and 102nd (Case 5) day. It was noted that the former 3 cases were acute LP infection and the latter 2 were probably subacute infection before admission or nosocomial secondary infection.

Legionellosis mainly occur in summer and autumn, but sporadic cases have been found throughout the year.<sup>4</sup> Of our 5 cases, 4 were from Hangzhou city proper and 1 from a town in Zhejiang province. Their illnesses started between October and January. Clinical manifestations were similar to those of previous reports.<sup>5</sup> Early stage LP pneumonia may be accompanied by bacteremia, usually leading to sepsis.<sup>6,7</sup> Case 4 in this series first experienced respiratory symptoms with mild fever, but his condition suddenly deteriorated, including high fever, marked leukocytosis, thoracic empyema, and liver abscess. Obviously, the patient was having a septic course, and the pathogens probably arose from infection of the lungs. LP

caused pneumonia may result in extensive necrosis of the lung tissue and formation of abscesses of up to 10 cm in diameter.<sup>8</sup> The reason for formation of lung abscess in Case 5 was probably because the patient failed to receive medical treatment in time. But LP culture of the lung tissue was negative possibly due to cefazolin administered after hospitalization. About 50% of legionellosis patients develop hyponatremia in the early stage due to increased secretion of antidiuretic hormones,<sup>5,7</sup> this phenomenon may be helpful in diagnosis. But levels of serum sodium were normal (134-144 mEq/L) in our series probably because of the limited number of cases.

Erythromycin is the drug of choice for treatment. According to Meyer<sup>5</sup> this drug may be given 2-4 gm daily for 3 weeks for avoidance of recurrence. The temperature began to fall after 24-48 hours of drug administration. Refampicin, doxycycline and SMZ combined with TMP were also effective, but penicillins, cephalosporins, vancomycin, clindamycin, and aminoglycosides were not helpful. Erythromycin is usually used at a 1.2 gm dosage per day in this country. Of the 5 cases, Case 2 was cured only by erythromycin (1.2 gm daily, iv for 7 days), the temperature of Case 1 began to withdraw on the 3rd day of treatment with erythromycin combined with chloromycetin; Case 3 received medecamycin and gentamycin, and the temperature also dropped, but later. These data demonstrate that erythromycin, medecamycin, chlorocetin and gentamicin are effective for this disease. In Case 5, the temperature normalized only when cefazolin was used. Obviously, the cephalosporins and aminoglycosides are not necessarily unresponsive to legionellosis. Case 4 was complicated by pleurisy and liver abscess and his temperature declined only after pus aspiration, showing that abscess drainage is very important in treating legionellosis.

#### REFERENCES

1. Kang XM, et al. Legionnaires' disease. Report of a case. Chin Med J 1983; 90:151.
2. Li Zhenda [2621 3791 1129], et al. "2nd National Conference on Infectious Diseases and Parasitology," 1983, p 239.
3. Fallon RJ. Legionellosis by the legion. Lancet 1983; 2:1035.
4. Swartz MN. Clinical aspects of legionnaires' disease. Ann Intern Med 1979; 90:492.
5. Meyer RD. Legionella infections. A review of five years of research. Rev Inf Dis 1983; 5:258.
6. McCrae AD, et al. Isolation of legionella pneumophila from blood culture. Br Med J 1979; 2:1189.
7. Edelstein PH, et al. Isolation of legionella pneumophila from blood. Lancet 1979; 1:750.
8. Liewin S, et al. Legionnaires' disease. A case of severe abscess-forming pneumonia. Am J Med 1979; 67:339.
9. Yu VL, et al. Legionnaires' disease. New clinical perspective from a prospective pneumonia study. Am J Med 1982; 73:375.

/6091

CSO: 5400/1115



PEOPLE'S REPUBLIC OF CHINA

CHINA CLAIMS 3 MAJOR DISEASES CONTROLLED USING TRACE ELEMENTS

HK050544 Beijing CHINA DAILY in English 5 Aug 86 p 3

[Article by Ye Dingbong]

[Text] Three major diseases have been successfully controlled by using trace elements, according to a preventive medicine expert.

Goiter, Keshan and Kaschin-Beck's diseases, which affect millions of people in China, can be either controlled or cured by adding fortified iodine or selenium to people's daily diet.

Incidences of the three diseases have dropped to the lowest level ever recorded, according to Chen Xiaoshu, director of Research Institute of Nutrition and Health under the Chinese Academy of Preventive Medicine.

Goiter, a disease found in many places of the world, occurs frequently in areas where iodine is lacking. In China, Chen said, 250 million people in 1,464 counties were once vulnerable to the condition.

Since large scale preventive work was carried out, introducing iodine salt to goiter-affected people, incidence had been reduced. The disease has been controlled or cured among 130 million people in 512 counties, according to Chen.

Keshan disease is a heart disease with a high death rate. It is found in the countryside of 15 provinces and municipalities in a belt that runs from the northeast to the southeast.

The areas affected by Keshan disease, more often than not, overlap with areas affected by Kaschin-Beck's disease, or osteoarthritis deformans endemica. Most incidences of Kaschin-Beck's disease were found in the northwest, Chen said.

Though the real causes of the two diseases are still unknown, scientists have discovered that lack of selenium in the diet appears to be a factor.

Since 1976, the people in the areas affected by the two diseases have been asked to take salt fortified with selenium. As a result, the incidence of

the two diseases in the north has been brought under control and the situation has been improved in the south.

Chen said China was the first country in the world to successfully use selenium in curing human diseases. The achievements have drawn attention from all over the world.

"But we have tremendous work to do before we can eliminate the diseases," she said.

/6662

CS0: 5400/4116

PEOPLE'S REPUBLIC OF CHINA

TIANJIN VIROLOGY SEMINAR RECORDS SUCCESSES

OW231246 Beijing XINHUA in English 1200 GMT 23 Jul 86

[Text] Tianjin, 23 Jul (XINHUA)--China has made marked progress in the research and treatment of viral diseases, according to China's first seminar on virology held here last week.

Nearly 500 experts from across the country shared their latest achievements at the meeting.

Hepatitis B and epidemic hemorrhagic fever used to be two major diseases threatening the Chinese population. Nowadays, Chinese doctors are able to accurately identify hepatitis B patients.

They have also discovered how hepatitis B virus can be transferred to a fetus and the effective way to cut off the channel of infection between them, the seminar was told.

China has also succeeded in separating the virus which causes epidemic hemorrhagic fever, according to the meeting. Progress has been made in developing a vaccine to combat it.

China is also able to detect with increasingly sophisticated equipment the viruses which lead to diarrhea, nasopharyngeal cancer, encephalitis B, dengue fever and infant deformity.

Meanwhile, progress has been demonstrated in the study of virology in animals, plants and insects as well as phagology.

In addition, a new virus has been discovered in rabbits suffering from hemorrhagic pneumonia. A vaccine to combat the disease has been developed, the seminar revealed.

/6662  
CSO: 5400/4116

PEOPLE'S REPUBLIC OF CHINA

IMPROVEMENT URGED IN RURAL MEDICAL CARE

OW121158 Beijing XINHUA in English 1000 GMT 12 Jul 86

[Text] Beijing, 12 Jul (XINHUA)--Rural medical care in China is not yet meeting the growing needs of those it serves, according to public health experts quoted in today's PEOPLE'S DAILY.

Participants at a national academic conference on rural reform and public health, which ended Friday in Yantai, Shandong Province, concluded that economic reform has improved rural life but has also created new health problems, the paper said.

To address these issues, conference participants organized the rural public health society, whose potential membership includes 3.54 million rural medical workers.

"The present medical facilities and system can no longer keep pace with the present rural situation," said one expert quoted by the Communist Party paper.

For example, improved medical care has cut infectious and location-related diseases, several conference participants noted. But, they said, with people living longer, more of them have strokes, heart disease and cancer.

At the same time, development of rural industries requires greater attention to safety and environmental protection and to occupation diseases, public health specialists said.

Higher rural living standards have also produced rising expectations about personal health and the ability of medical workers to make early diagnoses of diseases, according to several experts.

/6662  
CSO: 5400/4116

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

GUANGDONG 'PARA-CHOLERA' CASES--Beijing, 9 Jul (AFO)--Health authorities in China's southern Guangdong Province have identified 44 cases of "para-cholera", a potentially fatal illness closely related to true cholera, a Chinese medical official said Wednesday. The cases, which appeared from mid-May until mid-June on Hainan Island and in the port city of Shantou, were "light to moderate" and no deaths were reported, said Dr Wang Zao, director of the Health Ministry's Department of Disease Prevention. A Western doctor based in Beijing said he was not familiar with the term "para-cholera." But since cholera can be caused by several different varieties of organisms, he said the name suggested a less virulent strain. Dr Wang told AGENCE FRANCE-PRESSE that the reported cases were widely distributed in the two areas and that intensified measures were being taken in Guangdong and elsewhere in south China to prevent the disease spreading. Para-cholera can result in potentially deadly infections, though such cases are fewer than with true cholera, Dr Wang said. Since the middle of June no new cases had been reported, she said. [Text] [Beijing AFP in English 9 Jul 86 HK] /6662

PREVENTION OF ENDEMIC DISEASE--Beijing, 23 May (XINHUA)--China has made marked progress in the study and prevention of snail fever and endemic diseases. Guangdong Province and Shanghai have eliminate snail fever. Oncomelania has been wiped out covering an area of 11.1 billion square meters across the nation, and more than 11 million people suffering from the disease have been cured. [Summary] [Beijing XINHUA Domestic Service in Chinese 1310 GMT 23 May 86 OW] /6662

CSO: 5400/4116

POLAND

GEOGRAPHIC PATTERNS IN MORTALITY, HOSPITAL MORBIDITY ANALYZED

Krakow PRZEGLAD LEKARSKI in Polish No 3, Mar 86 pp 316-310

[Article by Docent M. Wysocki, M. D., director, Medical Statistics Center of the National Institute of Medicine, Warsaw: "Geographic Patterns of Mortality and Hospital Morbidity in Poland (Footnote) (Study conducted under Ministerial Research Plan MR-12)"]

[Text] Geographic patterns of morbidity in Poland were analysed using routinely collected data on mortality and hospital morbidity. Overall morbidity was considered as well as morbidity due to rheumatic heart disease, hypertensive disease, ischaemic heart disease, cerebrovascular disease, ulcer of stomach and duodenum, and cirrhosis of liver. After age-standardization of the coefficients the provinces were indicated with the lowest and the highest prevalence of above mentioned diseases in 1977 and 1979. Moreover, it was possible to detect the provinces with relatively large discrepancies between levels of hospitalizations and mortality.

The determination of differences in the disease rates in different regions may assist, on the one hand, in formulating hypotheses on the etiology of various diseases and, on the other, it may serve to direct the activities of health service in consonance with the health needs of the local population. To be sure, an accurate determination of the prevalence of various diseases is possible only with respect to diseases which are subject to obligatory reporting (contagious diseases, neoplasms). So far as the totality of all diseases is concerned, however, it is possible to use statistics on the death and hospitalization rates. While such statistics cannot be used to identify with precision the prevalence of diseases within a given population, they have the virtue of being collected routinely, in a standardized manner, for the country as a whole.

The aim of this study was to identify the provinces with relatively highest and lowest rates of overall morbidity as well as of the prevalence of several selected disease groups, as based on mortality and hospital morbidity data. In the analysis, equal significance was attached to each of these ensembles of data. The analysis was applied to data on two years, 1977 and 1979, which served to reduce the influence of fortuitous or short-period changes in the prevalence of diseases on the findings of the analysis.



## Material and Techniques

Data on mortality by age, sex, and province were obtained from the Main Office of Statistics. Data on hospitalization rate were taken from a survey of overall hospital morbidity conducted at hospitals under the jurisdiction of the Ministry of Health and Social Welfare and the Ministry of Transportation. The 1977 data were collected by the technique described in 4 and worked out at the Statistical Techniques Department of the National Institute of Medicine. The 1979 data were collected and processed by means of a modified system based on a 10 percent sample of hospital patients. The analysis was conducted for all diseases as a whole as well as for the following groups and types of disease (numbered in accordance with Revised Instructions No 8, MKChUiPZ): acute and chronic rheumatic diseases (390-398), hypertension (400-404), ischemic heart disease (410-414), cerebrovascular diseases (430-438), gastric and duodenal ulcers (531-532), and cirrhosis of the liver (571). These diseases accounted for more than one-fifth of all deaths and about 12 percent of all cases of hospitalization of males and 7 percent of females (Table 1). The selection of these particular disease groups for this study was due to their attendant relatively high mortality and hospitalization rates and the minimal number of diseases in each group. To be sure, this selection was complicated by the lack of uniformity in the classification of diseases when tabulating the data on mortality and hospital morbidity for 1977.

Mortality and hospitalization coefficients were standardized by age with the aid of the indirect standardization technique, and Poland's population was taken as the standard population. Next, the normalized values  $u_i = (w_i - W)S$  (where  $w_i$  means age-standardized coefficient for a given province,  $W$  is the nationwide coefficient for all Poland, and  $S$  is the standard deviation of age-standardized province coefficients) were computed for each coefficient and given year. The mean  $U$ , as derived from four normalized coefficients, i.e., from mortality in 1977 and 1979 and hospital morbidity in 1977 and 1979, was utilized to select the provinces with the lowest and highest occurrences of the selected groups of diseases. The computations were conducted separately for males and females.

Owing to the normalization, the mortality and hospital morbidity coefficients could be expressed on an identical scale despite their differing means and variabilities. In this connection, when ranking provinces by prevalence of given diseases, both mortality and hospitalization rate had an identical weight.

## Findings

Overall mortality and morbidity. The highest overall mortality and hospital morbidity coefficients were established for both males and females in the Jelenia Gora, Katowice, and Walbrzych provinces (Fig. 1). In these provinces mortality rate exceeded the nationwide level by from 2 to 11 percent depending on age and year. As for hospitalization rate, whose variability was greater by a factor of about 3 than that of the mortality rate, in these provinces it exceeded the nationwide average by about one-third. Making an allowance for the fact that in these provinces the per capita number of hospital beds [as published] exceeds the nationwide average by 10-30 percent, accounts only to a

small degree for such a high prevalence of hospitalization rate. An analysis conducted on the basis of coefficients that were additionally standardized with respect to the number of hospital beds yielded findings similar to those presented above.

The lowest mean coefficients were derived for the Warsaw, Gdansk, Krakow, and Siedlce provinces, in which the death rate was 2 to 8 percent below the national average and the hospitalization rate, 12 to 25 percent lower.

In Lomza Province the death rate was explicitly below the national average but the hospitalization rate was higher. A similar trend was recorded in Olsztyn Province, except that there it applied to women alone. A converse situation, that is, a high death rate and a low hospitalization rate, was recorded for Piotrkow Province.

Rheumatic heart disease was the principal cause of deaths and hospitalization in chiefly the northeastern provinces, but there it varied in frequency depending on sex (Fig. 2a). In Piotrkow Province, however, the indicators were high for both males and females. Mortality due to that disease in that province exceeded the nationwide average by more than one-third for males and more than two-thirds for females, and hospital morbidity was two-thirds higher for males and one-third higher for females.

In the Bydgoszcz, Gdansk, and Warsaw provinces rheumatic heart disease rate was lower for both sexes than in the other regions. The corresponding coefficients were one-third to one-fourth lower than for Poland as a whole.

Hypertension rate was relatively most prevalent in the Subcarpathian region (Nowy Sacz and Tarnow provinces as well as — for males — Rzeszow and Pila provinces) (Fig. 2b). Mortality due to that disease in these provinces was about 50-150 percent above the national average, and hospitalization rate, 15-50 percent above. Biala Podlaska Province also may be included in this group in view of the high — about double the national average — rate of deaths for which hypertension was given as the cause. By contrast, the lowest coefficients were recorded, regardless of sex, for the Bydgoszcz, Gdansk, Kalisz, and Siedlce provinces, in which they were one-half the national average.

Ischemic heart disease was most frequent in the Warsaw, Czestochowa, and Kalisz provinces. Among males a high level was also recorded for the Poznan and Katowice provinces, and among females, for the Krakow and Slupsk provinces (Fig. 3a). In these provinces, the mortality coefficients exceeded the national average by 50-100 percent and the hospitalization rate was about one-fourth higher than the national average, except in Warsaw Province, where it was still higher.

The lowest rates of ischemic heart disease occurred in the Biala Podlaska, Ostroleka, and Siedlce provinces, where the coefficients were one-half the national average. This level was also approached in the Lomza and Sieradz provinces as well as — with the exception of the hospitalization rate of females — in Skierniewice Province.

Noteworthy is the situation in Bielsko Province, where the death rate of both males and females was relatively high (in 1979 it was about double the national average) but the hospitalization rate was one-fifth lower than the national average.

Cerebrovascular diseases occurred more often among males and females living in Warsaw and Czestochowa provinces than in other regions (Fig. 3b). There, the death rate exceeded the national average by 50 percent and the hospitalization rate, by 8-47 percent. By contrast, the lowest death and hospitalization rates, lower by nearly one-half than the national average, were recorded for the Koszalin, Pila, Leszno, and Lomza provinces. In Chelm Province the death rate exceeded the national average by 40 to 82 percent, but the hospitalization rate was one-fourth below the national average.

Gastric and duodenal ulcers. In no province was the prevalence of these diseases explicitly greater or smaller than the national average for both males and females, for both the years surveyed (Fig. 4a). An exception is Chelm Province, in which the death rate from these ulcers exceeds the national average by more than one-half (although in 1977 it was close to the national average for males), and the hospitalization rate by about one-third. In addition, Walbrzych Province is among the provinces with the highest prevalence of these diseases among both males and females, chiefly owing to a hospitalization rate that is more than one-half higher than the national average, but its mortality rate due to these diseases is no higher than 10 percent above the national average. In Katowice Province, too, a high hospitalization rate (exceeding the national average by one-third to one-half) was recorded, but the death rate was about 10 percent below the national average. On the other hand, the situation is reversed for the Siedlce and Tarnobrzeg provinces, in which the death rate due to these diseases exceeded the national average by 5 to 90 percent but the hospitalization rate was one-fourth below the national average. The only province for which consistently low indicators for both males and females were recorded was Poznan Province. There, the death rate was almost one-half below the national average, and the hospitalization rate, about 20 percent lower.

Cirrhosis of the liver. The geographic pattern of the spread of this disease was stable in time and similar for males and females (Fig. 4b). No major discrepancies between death rate and hospitalization rate were recorded. The highest rates of cirrhosis of the liver were recorded for the Katowice, Warsaw, and Lodz provinces, where the death rate exceeded the national level by 25-91 percent and the hospitalization rate, by 52-89 percent. The provinces in which this disease is the least widespread are located in the southeastern part of the country. There, both mortality and hospital morbidity were one-half below the national average.

#### Discussion

Among the causes of the above differences in the frequency of diseases in different regions of the country, problems associated with measuring that frequency are undoubtedly to be distinguished. Death statistics contain only information on the most severe cases of the diseases in question, and the coroner's diagnosis often may be questionable. But as for the statistics on

(1) Rozpoznanie	(2) Zgony		(3) Leczeni w szpitalach	
	(4) Mężczyźni	(5) Kobiety	(4) Mężczyźni	(5) Kobiety
(6) Ogółem	1016 (933—1098)	821 (759—884)	8959 (6563—12133)	10336 (7825—14011)
(7) Choroba reumatyczna serca	7 (4—15)	9 (3—19)	66 (33—121)	94 (45—155)
(8) Nadciśnienie tętnicze	14 (4—33)	23 (3—58)	136 (69—276)	194 (93—394)
(9) Niedokrwienność serca	121 (33—214)	87 (29—175)	423 (205—803)	231 (92—420)
(10) Choroby naczyń mózgu	63 (27—92)	74 (22—126)	137 (80—234)	118 (45—209)
(11) Wrzód żołądka i dwunastnicy	8 (4—13)	3 (1—7)	398 (188—477)	109 (39—191)
(12) Marskość wątroby	16 (5—29)	8 (2—15)	44 (12—83)	22 (6—40)
(13) * w nawiasach: zakres zmienności wskaźników standaryzowanych wg wieku w poszczególnych województwach				

Table 1. Mortality and Hospital Morbidity in Poland in 1979 by Diagnosis and Sex. Coefficients per 100,000 capita.

Key: 1. Diagnosis; 2. Deaths; 3. Hospital Patients; 4. Males; 5. Females; 6. Total; 7. Rheumatic heart disease; 8. Hypertension; 9. Ischemic heart disease; 10. Cerebrovascular diseases; 11. Gastric and duodenal ulcers; 12. Cirrhosis of the liver; 13. The figures in the parentheses refer to the variability of the age-standardized coefficients in discrete voivodships.



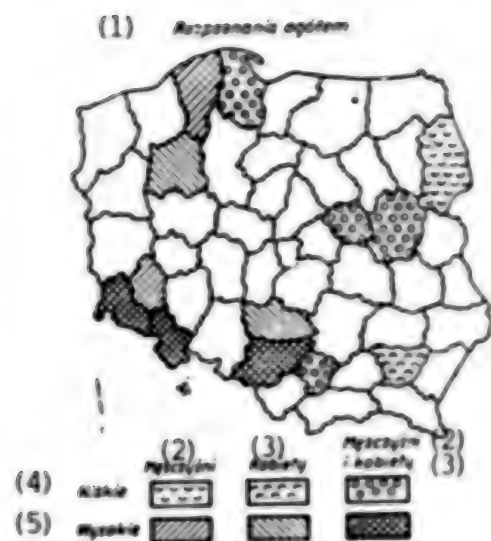


Fig. 1. Voivodships With Highest and Lowest Prevalence of Overall Morbidity (According to normalized U coefficients)  
Key: 1. Overall morbidity; 2. Males; 3. Females; 4. Low; 5. High

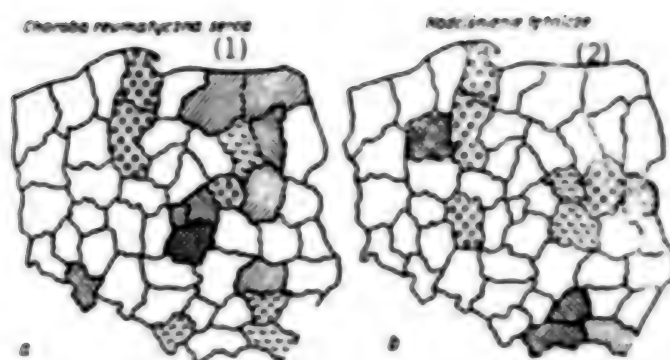


Fig. 2. Voivodships With Highest and Lowest Prevalence of Rheumatic Heart Disease (a) and Hypertension (b) (According to normalized U coefficients)  
Key: 1. Rheumatic heart disease; 2. Hypertension

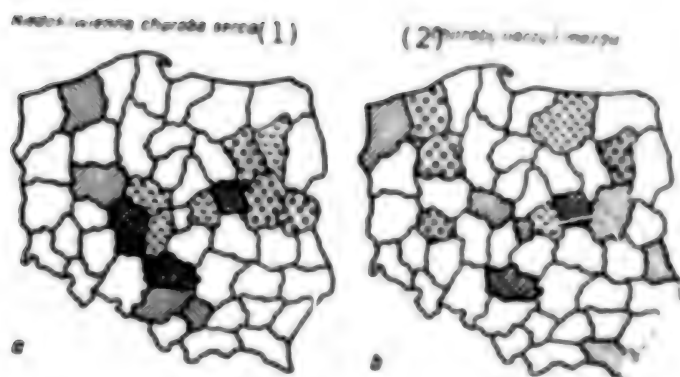


Fig. 3. Voivodships With Highest and Lowest Prevalence of Ischemic Heart Disease (a) and Cerebrovascular Diseases (b) (According to normalized U coefficients)  
Key: 1. Ischemic heart disease; 2. Cerebrovascular diseases

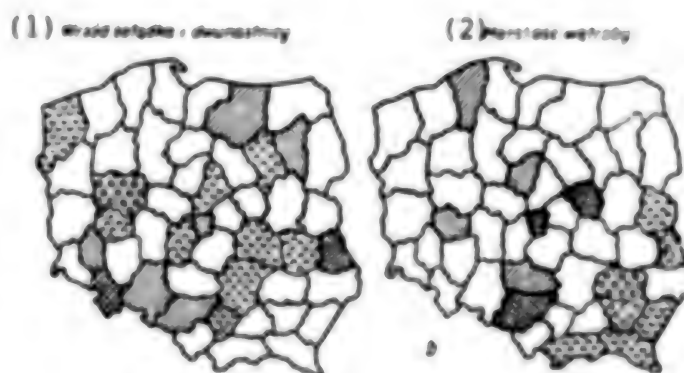


Fig. 4. Voivodships With Highest and Lowest Prevalence of Gastric and Duodenal Ulcers (a) and Cirrhosis of Liver (b) (According to normalized U coefficients) Key: 1. Gastric and duodenal ulcers; 2. Cirrhosis of liver

hospitalized patients, they are probably more accurate, and they do include milder cases, but they pertain to selected groups of patients, and the problem is that the selection may differ in different regions, because it may be affected by differences in access to hospitalization and other forms of health care. These factors may influence the rate of readmissions of the same patients to hospitals. But the variability of the percentage of readmissions in discrete provinces is not large (9 to 14 percent of all cases of hospitalization). Hence, this factor does not markedly influence the differences in the geographic pattern of morbidity, although the data presented pertain to recorded cases.

The figures on the hospitalization rate were estimated on the basis of a sample. Thus they are flawed by some random error. For the diseases with less frequent hospitalization rates and for the smaller provinces, the standard deviation of the estimated coefficients for 1979 may have reached one-third. This may have affected the findings of the analyses of statistics on rheumatic heart diseases and cirrhosis of the liver. As for the other, much more frequent groups of diseases analyzed in this study, the error is of the order of 10 percent of the value of the coefficients, while for overall morbidity it does not exceed 2 percent. The fact that this study covers two discrete years markedly reduces the effect of these random errors on the findings.

For both hospitalization rate and mortality the coefficients for 1977 and for 1979 were found to be markedly similar. The correlation coefficients ranged from 0.44 to 0.95, and only for the mortality due to gastric and duodenal ulcers did these coefficients fall to 0.33. This points to some stability in time of the trends analyzed.

The geographic patterns of mortality and hospitalization rate differed markedly for nearly every disease group analyzed. The correlation coefficients ranged from 0.15 for gastric and duodenal ulcers to 0.57 for overall morbidity, and only for cirrhosis of the liver did they reach 0.82. This illustrates the variability of the problems described by each of these indicators. At the same time, consideration of mortality and hospitalization rate enhances the possibility of isolating the provinces in which the prevalence of given groups of diseases is at its highest or lowest. It also makes it possible to identify the provinces in which the gap between death rate and hospitalization rate is relatively large.

Regardless of the flaws in the measurements of disease rates, the recorded differences in the geographic patterns of the coefficients in question undoubtedly reflect the actual differences in morbidity throughout the nation. The factors accounting for these differences are not easy to pinpoint, and their analysis is the subject of a separate investigation 3.

#### BIBLIOGRAPHY

1. Heller, R. F., "How Accurate Are Death Certificates?", PRZEGLAD LECARSKI, No 40, 1983, p 541.



2. Krzyzanowski, M., and Wojtyniak, B., "Hospitalization of the Elderly in Poland," ZDROWIE PUBLICZNE, No 94, 1983, p 505.
3. Krzyzanowski, M., and Wojtyniak, B., "Relationship Between Mortality and Hospital Morbidity and Environmental Factors," PRZEGLAD LECNARSKI, No 42, 1986, p 779.
4. Sawicki, F., Wojtyniak, B., and Charska, M., "Hospital Morbidity in Poland During 1961-1972 By Sex and Age," ZDROWIE PUBLICZNE, No 87, 1976, p 501.

1386

CSO: 5400/3023

UNITED KINGDOM

BRIEFS

RISE IN WHOOPING COUGH--Scotland is facing an epidemic of whooping cough, with almost five times as many cases this year as in the corresponding period of 1985, it was announced yesterday. Mr John MacKay, the Scottish Health Minister, said that the number of cases began to increase last year, and already the number of cases this year at 1,375 was greater than in the whole of 1985. Mr MacKay urged all parents to seek vaccination, which was the only way to reduce the spread of the epidemic, which took place in four-year cycles. He said that any parents with doubts about vaccination should seek advice from their doctor or clinic. [Text] [Edinburgh THE SCOTSMAN in English 10 Jul 86 p 8] /9317

CSO: 5440/108

ZIMBABWE

LOCAL BERRY MAY ERADICATE BILHARZIA

Gweru MOTO in English No 46 p 12 [no date given]

[Text]

ZIMBABWEAN scientists are studying the feasibility of using a berry, traditionally used as a soap, to eradicate bilharzia, one of the most widespread and debilitating diseases in the Third World.

The disease, also known as schistosomiasis, afflicts 200 million people in 74 developing countries and has the potential to affect another 600 million.

In Zimbabwe it reportedly afflicts over two million people making it the second most important parasitic disease after malaria.

The berry from the *Phytolacca Dodcandra* plant — locally known as the gopo plant, is known to have molluscicidal properties against schistosomiasis transmitting snails and is reported to be in abundance in Zimbabwe.

According to one of the researchers, Cde Jerry Ndamba, the possibility of using the berry in snail control will be known after next year when researchers based at Blair Research Laboratory in Harare, have completed a three-year research project.

"Although it is difficult to say at the moment when the plant can be used for snail control," Cde Ndamba said, "indications are that by the end of our preliminary studies it would be possible to recommend it for snail control in rural areas."

"Should *Phytolacca Dodcandra* prove to be a viable molluscicide, it is our intention to actively involve the local community in the cultivation, harvesting and application of the berries, with the village health worker acting in an advisory capacity," he added.

That the berries of the gopo plant are molluscicidal is no longer in question. Rather, what is being looked into is whether

it can replace the chemicals presently in use, whether it will be cheaper to use and whether it will be accepted by the community.

The snail killing properties of the berries were first uncovered by Dr Akilu Lemma of Ethiopia's Institute of Pathobiology while studying the distribution and ecology of bilharzia-transmitting snails in the River Assam near the town of Adwa in northern Ethiopia in 1964.

Dr Lemma noticed that in areas next to where people's clothes were, there were many dead snails and small fish floating in the water. Some distance down-stream or immediately up-stream from such washing places, abundant live snails were present.

This led Dr Lemma to the idea that the "soap" which people used for laundering might have molluscicidal properties. Experiments using "Endod", *Phytolacca Dodcandra* — which people used for washing — proved this.

In Zimbabwe, research work on the use of berries began in 1983. Much extensive work, however, only started last year when a three-year research project was launched.

Studies carried out by Cde Steven Chandiwana, one of the researchers at Blair, showed that two types of Gopo, one from Chitungwiza and the other from Seke, achieved a 100 percent kill rate within 22 hours of exposure at 25 parts per million.

One part per million is one milligramme of berry powder dissolved in a litre of water.

The Seke plant, which was stronger, achieved a 100 percent kill rate within five hours at the same concentration. It was stronger than the Ethiopian type which had

an 80 percent kill rate at the same concentration and time.

Further studies by his colleague, Cde Jerry Ndamba, showed that the most potent berries were from the Masvingo area. Berries collected from there proved 100 percent lethal in concentrations of as low as six parts per million.

Studies carried out jointly by researchers from Blair and Steve Mavi of the National Herbarium and Botanic Gardens also in Harare showed that the gopo plant was found in almost every region of Zimbabwe although it is mostly in areas of high altitude and good rainfall.

This makes the plant readily available to the community and therefore cheaper to get. It can even be cultivated where conditions allow that.

Should the experiments being carried out be successful, the advantages of using the gopo plant for the control of bilharzia will be enormous.

The biggest advantage will be cost. The use of the plant will reduce Zimbabwe's dependence on imported chemicals. It will also serve the country much needed and very scarce foreign currency.

As use of the plant will have to be community based this will in turn lead to improved efficiency of the programme.

"A community based to schistosomiasis control would considerably reduce the cost of the control programme, principally because the plant molluscicide and manpower costs are borne by the community," Cde Chandiwana said.

With the shortage of washing soap, due to lack of foreign currency, people can also take advantage of the availability of the berries.

According to Dr Lemma, clothes washed with the berries are thought to be whiter and normally do not have lice, ticks or mites with them.

The head of the Epidemiology Unit in the Ministry of Health, Dr Richard Munochiveyi said in the United States and in Ethiopia, Endod-containing detergent formulations for washing clothes were being developed. Because of its uniqueness and commercial potential the procedure was being patented in the United States and other countries, he said.

Although studies are still continuing, indications so far show that the plant is safe for humans and animals. This will be an added advantage. □

VIETNAM

## MEASURES TO PROTECT 10TH MONTH RICE DISCUSSED

Hanoi NHAN DAN in Vietnamese 16 Jun 86 p 2

[Article by Nguyen Quang Tho, M.A., of the Crop Protection Department of the Ministry of Agriculture: "Some Measures To Guard Against and Eliminate Insects and Diseases Harming 10th Month Rice in the Northern Provinces"]

[Text] Among the factors relevant to the situation of insects and diseases harming 10th month rice this year in the northern provinces, in addition to the common feature that the composition of insects and diseases which have arisen in 10th month rice are more varied than those during the fifth month-spring rice season and cause harm from the rice seedling stage to the time when the rice is harvested, something worthy of attention is that the infestation of brown leafhoppers carried over to the 10th month season from the fifth month-spring season is much greater than in any previous year. The CR203 rice variety (accounting for about 50 percent of the total) is resistant to brown leafhoppers, but the other varieties planted on large areas, such as NN 73-10, CN 2, Bao Thai, Moc Tuyen, glutinous rice, etc., are infested with many kinds of insects and diseases to differing degrees. At the same time, there is a severe shortage of agricultural materials compared to the requirements of production. The complicated changes in the weather have a major effect on production, and waterlogging and drought have both directly affected measures for preventing and eliminating insects and diseases. Therefore, from the beginning of the season it is necessary to take the initiative in adopting appropriate, highly effective policies and measures in order to protect the harvests.

With the regard to the principal harmful insects and diseases mentioned above, it is necessary to pay attention first of all to brown leafhoppers, stem borers, army worms, leaf curlers, rice hispa, silver-leaf disease [*Xanthomonas oryzae*] and rice wilt. The mountain region must pay attention to rice yellows and beetles. Among the various kinds of insects and diseases, some types cause harm from the rice seedling stage to the time when the rice is ripe (brown leafhoppers, stem borers, etc.), some types only cause harm during a certain stage of the rice's growth (army worms cause harm when the rice is heading, and rice wilt only causes harm after the rice has tillered), and some types are present only in a certain number of areas (rice yellow only causes harm in the Tay Bac and Viet Bac mountain regions). All those types of insects and insects and diseases, except for army worms, were present in the

fifth month-spring rice. After the rice was harvested they remained in the stubble, or immediately moved to the 10th month rice seedling areas and then caused damage to the 10th month rice.

In preventing and eliminating insects and diseases it is necessary to pay attention to all three phases: when rice is still in the seedling stage, when it tillers, and when it heads. On the rice seedling area, attention must be paid to doing a good job of preventing and eliminating the stem borers, leafhoppers, leaf rollers, and rice hispa. When rice is tillering it is necessary to prevent and eliminate the various kinds of leafhoppers, stem borer, leaf rollers, rice hispa, silver leaf disease, and rice wilt. When rice is heading, the most important phase of rice, it is necessary to pay attention to brown leafhoppers, stem borers, army worms, beetles, and rice wilt.

At a time when chemicals and pumps are still in short supply, it is necessary to use many manual methods to effectively eliminate many kinds of insects and diseases. Among the methods of preventing and eliminating insects and diseases on the 10th month rice in the northern provinces, attention must be paid to the following principal points:

After the fifth month-spring rice has been harvested, time must be found to turn over the soil to kill the insects hiding under the roots of the stubble, such as stem borers, leafhoppers, rice hispa, and rice gall flies. If the paddies lack water and cannot be plowed in time, the stubble should be cut close to the roots and weeds should be cut around the paddy borders in order to kill the various kinds of leaf curlers, leafhoppers, etc.

The soil of rice seedling beds must be carefully prepared and the borders must be kept weed-free in order to reduce the sources of insects and diseases. Rice seedling beds should be concentrated to facilitate management and prevent and eliminate insects and diseases. Rice seedlings should be sown at the specified times. When the seedlings have at least three leaves the situation of insects and diseases on the seedlings must be continuously monitored and such manual methods as using nets to catch stem borer moths, leaf curlers, and rice hispa, the plucking of stem borer egg nests, etc., should be employed. With regard to some kind of insects, it is possible to combine the use of insecticides, but they must be used economically and with the correct techniques. Rice seedlings which are uprooted for transplanting must be free of insects and diseases, and seed seedlings from which buds have broken off, which are bent, etc., must be eliminated.

Rice must be transplanted on schedule, and it is necessary to do a good job of organizing the continuous monitoring of changes in insects and diseases affecting 10th month rice and take the initiative in combining the elimination measures, while adjusting the water level in order to limit rice wilt, weed, rake mud, and spread fertilizer to eliminate rice yellows, and spread poison to kill army worms. Usually, when the rice has finished heading the various kinds of insects and diseases easily cause harm over a large area and causes rice yields to decline greatly, especially beetles, brown leafhoppers, and army worms. Many places have experience in such elimination measures as separating the rice into small areas in order to kill leafhoppers in flooded paddies, and using poison or fire to kill beetles and catch army worms. Only



when necessary should chemicals be used. They should be used to ensure the through elimination of insects and the situation of many repeated spraying should be avoided. In that phase, if the rice is harmed by insects and diseases for an additional day the yield declines greatly.

In addition to the coordination and application of all the measures mentioned above, the cooperatives must organize specialized units, prepare sufficient pumps and chemicals in advance, and have plans to promptly eliminate the insects and diseases to prevent them from spreading, limit the damage to the lowest level, and ensure uniform 10th month rice yields and output in all plantings and on all fields.

5616

CSO: 5400/4390

VIETNAM

COUNTRY WARNED OF RICE CROP INSECT OUTBREAK

BK041150 Hanoi Domestic Service in Vietnamese 0500 GMT 31 Jul 86

[Text] The Vegetation Protection Department recently issued a notice saying that summer-fall and 10th-month rice in all provinces throughout the country is being ravaged by two-dot stemborers, brown planthoppers, white leafhoppers, rice caseworms, rice armyworms, ground beetles, rice blast, and yellow dwarf; especially two-dot stemborers, brown planthoppers, white leafhoppers, rice caseworms, and rice armyworms.

In the northern province, two-dot stemborer larvae continue ravaging early summer-fall rice with an average density of 1-2 larvae per square meter. In highly infested areas the density of those larvae is 15-20 per square meter.

In the Mekong River delta provinces, as many as 20,000 hectares of riceplants that are in the blossoming stage have been affected by two-dot stemborers. Of these, more than 4,000 hectares have been subject to serious damage.

It is forecast that two-dot stemborers will begin to metamorphose into flies in abundance in mid-August and that these flies will cause silver blossoms to summer-fall and 10th-month riceplants in the northern provinces. Meanwhile brown planthoppers and white leafhoppers will continue to revage the main 10th-month rice crop. In the southern provinces, rice caseworms and stemborers will continue to develop and ravage summer-fall rice and 10th-month rice.

To limit the losses caused to rice by insects and blight in the days ahead, the Vegetation Protection Department requests that all localities in the north keep a close watch for the appearance of two-dot stemborer flies of the fourth litter; trim wilted branches and destroy nests containing insect eggs; and keep abreast of the development of brown planthoppers, rice caseworms, and rice hoppers over the areas of early 10th-month rice so that countermeasures can be adopted promptly.

Meanwhile, the southern provinces should continue detecting and destroying the nests of brown planthoppers and white leafhoppers along with eradicating stemborers, rice caseworms, and ground beetles.

/9738  
CSO: 5400/4402

VIETNAM

BRIEFS

MEKONG DELTA PEST CONTROL--The summer-fall rice crop is developing fairly well, but harmful insects and diseases have affected more than 100,000 hectares. Along with urgently harvesting the early rice crop, various localities are concentrating all resources, means, and manpower on tending to and protecting the summer-fall rice from drought, harmful insects, and diseases. An Giang, Cuu Long, and Dong Thap provinces have provided production collectives with more than 6,000 additional metric tons of nitrate fertilizer and 170,000 bottles of pesticide to promote the growth of summer-fall rice plants and to protect them from harmful insects and diseases. Meanwhile, Long An, Ben Tre, Hau Giang, and Cuu Long provinces have mobilized 3,700 additional diesel pumps to irrigate ricefields. Due to their active inspection work, prompt detection of harmful insects and diseases, and expeditious sending of pesticide to key areas within 1 week Tien Giang and Ben Tre provinces managed to save nearly 10,000 of the 12,000 hectares of summer-fall rice hit by harmful insects and diseases. [Text] [Hanoi Domestic Service in Vietnamese 2300 GMT 28 Jul 86 BK] /9738

CSO: 5400/4402

END

**END OF**

**FICHE**

**DATE FILMED**

19 SEPT 86